Transforming Education for Sustainable Development

Designing a Pilot Program for the Park Slope Education Complex (Middle School 88)

Strategic Plan and Final Report

Columbia University

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Prepared for
Park Slope Education Complex (Middle School 88)

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Abbreviations and Terms

To Note: MS 88 stands for Middle School 88, which will also be referred to as Park Slope Education Complex throughout this report.

EI: Earth Institute

EL: Expeditionary Learning

HSS: High School for Sustainability

IDOE: Iowa Department of Education

IPW: Integrated Projects Week

MPA ESP: Master of Public Administration in Environmental Science and Policy

MS 88: Middle School 88

NYC DOE: New York City Department of Education

NYSED: New York State Education Department

PARCC: Partnership for Assessment of Readiness for College and Careers

PlaNYC: Plan New York City

STEM Education: Science, Technology, Engineering, and Mathematics Education

UN: United Nations

Unit: Academic subject matter that is covered in each class for 6-8 weeks, on average

USPESD: U.S. Partnership for Education for Sustainable Development

VAE: Vermont Agency of Education

Preface

This report is a product of the Workshop in Applied Earth Systems and Policy Analysis. The workshop is a requirement for the Master of Pubic Administration in Environmental Science and Policy at Columbia University's School of International and Public Affairs. It is meant to provide students with hands-on experience with clients in the non-profit and public sectors to refine project management skills in a real world setting. In the spring of 2013, 11 students created a sustainability curriculum and a management plan to implement at the Park Slope Education Complex, which will be referred to as Middle School 88 or MS 88 throughout the following sections. This report highlights the group's research, process, and final management plan as well as our curriculum for the school.

The Master of Public Administration in Environmental Science and Policy (MPA ESP) is an intensive 12-month master program at Columbia University's School of International and Public Affairs in partnership with The Earth Institute. The program combines environmental science courses with management and policy classes to prepare students for project management roles in the public and non-profit sectors as well as the environmental departments of private companies.

Acknowledgements

We offer our deepest appreciation to our faculty advisor, Nancy Degnan, for her expert guidance and her unending support throughout the entire process of this project. Furthermore, we extend our gratitude to Ailene Altman Mitchell, Principal of the Park Slope Education Complex and Assistant Principle, Sarah Panag, as well as all faculty members involved in offering their input and extensive knowledge on the subject. Finally, we thank the students of Park Slope Education Complex for serving as the driving inspiration and motivation for this project.

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EXECUTIVE SUMMARY

New York City continues to be on the cutting edge of sustainability through citywide initiatives such as PlaNYC. City agencies, such as the Department of Education, have made strides towards reversing climate change and environmental degradation. The City's education system has risen to the occasion with increasing numbers of "pioneering schools" taking the lead on promoting sustainability in education.

A group of 11 graduate consultants were given the task to create an interdisciplinary curriculum for Park Slope Education Complex (Middle School 88), located in Brooklyn, New York that would integrate sustainability concepts with existing curriculum as well as make the education process more sustainable itself. In order to accomplish these two overarching goals in three months, the team created three necessary deliverables to be used by Park Slope Education Complex as a pilot program furthering the school's desire to become more sustainable.

Design an interdisciplinary core curriculum that emphasizes sustainability education - The team created curriculum units throughout the academic years of 6th, 7th, and 8th grades at MS 88. The curriculum uses the school's current curriculum topics covered in Reading, Writing, Math, Science, and Social Studies classes. Our curriculum provides lesson ideas as well as projects to implement at the end of the unit, while following national, state, and sustainability standards.

Develop a management and financial plan - A management plan is necessary to provide guidance to school administration about *how* to implement a sustainability curriculum. By outlining the new staff, existing staff development, and education materials necessary to implement our sustainability curriculum, we provide specific inputs, outputs, and outcomes of these three areas of implementation. Inherent in this management plan is how to measure change, collect information, report information, and provide feedback through the implementation process. Furthermore, the financial plan includes a budget that takes leadership, events and conferences, as well as overhead and supplies in the implementation process into consideration. The financial plan also suggests ways to acquire more funding from and outreach to different sectors in New York City.

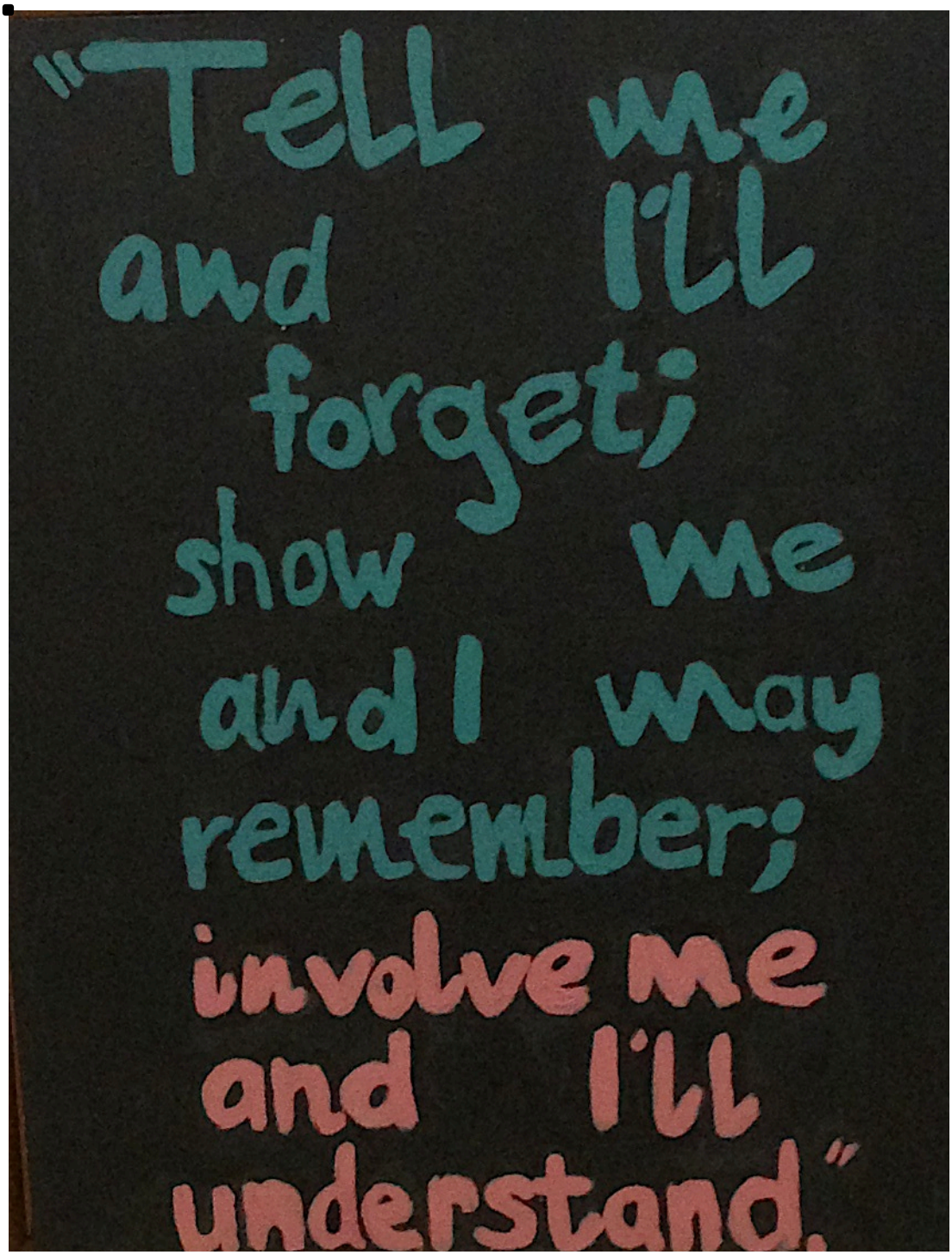
Devise teacher performance evaluations - As part of the management system, we have created performance management indicators that allow teachers to evaluate how well their students are absorbing the sustainability curriculum and how well the teachers, themselves, are implementing the curriculum. These indicators act as a method of measuring the success of this pilot program and

will identify ways to improve the school's implementation of the sustainability curriculum year after year in order to eventually make this curriculum a model for other schools both citywide and nationally.

Although these three deliverables comprised the majority of our time and efforts, this report also details the team's process in understanding, preparing, and creating these final products. Because this project aims to provide an example of sustainability implementation for MS 88, we did not underestimate the importance of providing the approaches and specific resources that we used in developing our deliverables.

Above all, this report serves as a step towards educating a generation capable of reversing the environmental damage already in effect worldwide. This report is a manifestation of a greater intent to equip young students with the knowledge, skills, and passion for becoming environmental stewards in their everyday lifestyles as well as in their chosen college or career paths.

THE PROJECT


"Tell me
and I'll
forget;
show me
and I may
remember;
involve me
and I'll
understand."

Introduction

PlaNYC is a long-term strategy spearheaded by Mayor Michael Bloomberg to prepare New York City for one million more residents (NYC.gov, 2013). Through 25 city agencies, it implements initiatives such as enhancing the economy as well as making the city more sustainable in an effort to mitigate climate change by 2030 (NYC.gov, 2013). In partnership with the New York City Department of Education, the largest public school system in the world, PlaNYC has been working towards making public schools more sustainable through two approaches. First, schools make efforts to improve recycling on campus and to reduce their carbon footprint through more sustainable energy use and conservation. The second approach seeks to integrate sustainability curriculum to individual schools to equip students with a better understanding of sustainability and the skills to apply sustainability to their lives and our future (NYCDOE, 2013). Select "pioneering" schools have already begun the process of designing methods of integrating a core sustainability curriculum.

Partnership with MS 88

The Park Slope Education Complex is one of these pioneering schools. Located in Brooklyn, New York, MS 88 is one of the largest middle school campuses in New York City, educating over 1,200 middle school students with 95 faculty members. Our project is a result of Principal Ailene Altman Mitchell's vision to expand MS 88's curriculum to integrate sustainability, based on the U.S. Partnership for Education for Sustainable Development standards (which will be discussed in further detail in the Secondary Research section) created in 2009 (USPESD, 2009). As our client, MS 88's requests were threefold:

- Incorporate U.S. Partnership for Education for Sustainable Development standards
- Establish an integrated sustainability curriculum
- Maintain existing curriculum

Thus, in the past three months, our team of 11 graduate students, acting as consultants in partnership with MS 88 faculty, worked to create an interdisciplinary sustainability curriculum. The pilot program included completing the following components:

- Conducting primary and secondary research on state and national education standards, sustainability standards, as well as research on schools and programs in the United States that have already integrated a sustainability curriculum.
- Designing a core sustainability curriculum that relates to the existing curricula in Reading, Writing, Math, Science, and Social Studies classes.

- Creating evaluation mechanisms to ensure that the pilot program can easily be used as a model

Strategic Goals

After face- to- face meetings with our client to clarify their requests to us, we outlined three goals that further defined the direction of our project.

Design an interdisciplinary core curriculum that emphasizes sustainability education

Our main objective was to create a sustainability curriculum that integrated middle school disciplines in Literacy -- reading and writing -- Math, Science, and Social Studies. This curriculum would not only meet local, state, and national education standards but it would also be based on sustainability standards and would allow students to be more engaged in all of their classes, enhancing their learning experience. By teaching students about sustainability at the middle school level, they are more likely to be environmentally conscious individuals who, in the long-term, take greater responsibility in reversing the environmental degradation currently taking place.

Develop a management and finance plan

Once we created the sustainability curriculum, we had to plan *how* we were going to implement the new curriculum into MS 88. Detailing new staff to hire, educational materials necessary, as well as the inputs, outputs, and outcomes of the implementation, the development of a management plan outlines specific actions for MS 88 to take for the successful integration of a sustainability curriculum. As part of the management plan, the financial plan outlines the resources required to implement the curriculum, taking into account necessary expenses, research and development, as well as outreach.

Devise teacher evaluations to build the pilot program as a model

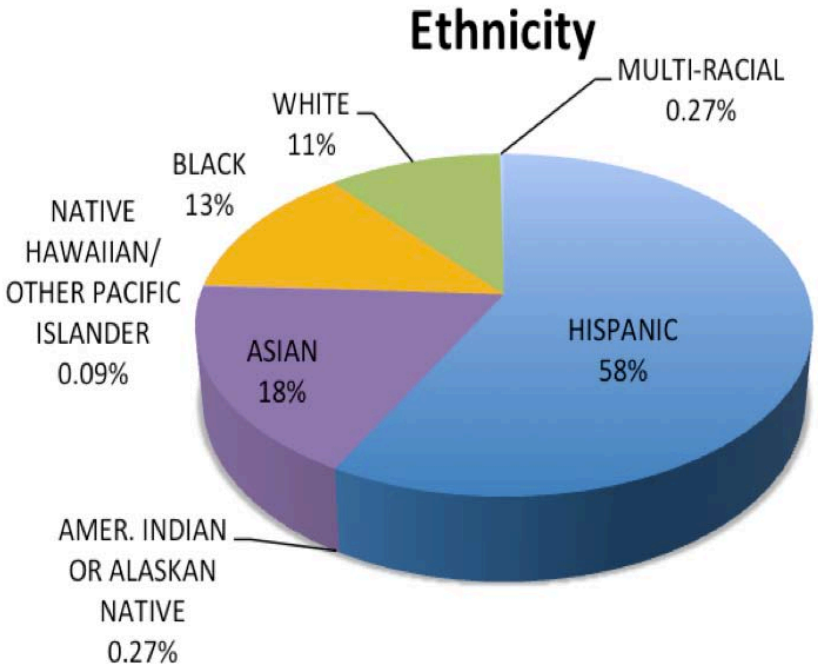
In order to effectively measure the success of implementing a sustainability curriculum, we devised teacher evaluation questions that serve as indicators measuring the progress of how well students and teachers are adapting to the new sustainability curriculum. Having performance indicators will allow MS 88 to pinpoint its successes and its challenges of adapting to this curriculum. This will enable the school to refine its process to make the pilot program more effective as a model program in the future.

Information about MS 88

Middle school is a critical period during a child's life. Students' experiences in middle school determine whether they graduate high school and continue their education or drop out. New York City Department of Education is the largest in the country, comprised of 31 school districts (NYCDOE, 2011). Students come from 197 different countries and 168 languages are represented among New York City's student body (NYCDOE, 2011). MS 88 is located in the Park Slope neighborhood of Brooklyn and in the 15th school district of New York City (NYCDOE, 2011).

Student Demographics

There are 1,207 students who attend MS 88. The majority of the student body, 58%, are Hispanic, followed by Asian, 18%, black, 13%, and white, 11%. English is a second language for 15% of the students categorizing MS 88 as a Title III school, at which English as a Second Language instruction is offered (NYCDOE, 2011, 2013).



Source: New York City Department of Education Statistics and Budget for MS 88 (NYCDOE, 2013)

Figure 1: This chart depicts the ethnic background of students at MS 88 as a percentage of the school's total student body.

Students living in low-income households comprise 80% of the school's student body, qualifying MS 88 as a Title I school (NYCDOE, 2011). Under Title I, MS 88 is

entitled to serve students whose family income is below the annual income poverty line with free-lunch at school (NYCDOE, 2013).

Houses

MS 88 is divided into three houses that provide themes to the curriculum. The three houses are the School of Media Arts and Technology (SMART), the School for Medical & Health Careers (Medical), and the School for Integrated Studies through the Arts (SISTA). The house system connects in-class education with hands-on experience to enhance students' learning experience (MS88, 2008).

The School for Media Arts, Research, and Technology prepares students for careers in graphic arts, animation, and graphic design. Students become proficient with computers, scanners, and digital and video cameras. They will also have the opportunity to publish a school newspaper and senior magazine, better understand robot design as part of a school Robotics team, and intern with graphic art designers. The School for Medical & Health Careers aims to educate about health and disease prevention while students learn about careers that promote healthy lifestyles. Students will have opportunities to volunteer with geriatric centers, learn first aid, collaborate with New York medical students on research, as well as tour medical centers and laboratories. The School for Integrated Studies through the Arts fosters students' creativity and encourages students to participate in local and national arts competitions, create art portfolios for specialized arts high schools, and enroll in drama, guitar, percussion, and visual arts after-school programs (MS88, 2008).

The house system is designed to strengthen the relationships between students and faculty, to enhance student achievement, as well as to improve students' social behavior and their attitudes towards school.

Because MS 88 is already a highly progressive and organized school, providing several resources to their teachers and students, MS 88 has the capability and support system to implement a sustainability curriculum.

THE PROCESS

Introduction

Because this project serves as a *pilot program* for MS 88, our team found that detailing the process that led to our end result was essential. Because this project may also serve as a *model* beyond MS 88 as they share it with other potential pioneering schools, it is invaluable to inform administrators and faculty of the considerations, research, organization, and time commitment necessary to develop a sustainability curriculum as well as a management plan.

Sustainability Curriculum versus Sustainable Education

Our team initiated this project by deriving a definition of sustainability on which we could all agree. We chose to adopt the U.S. Partnership for Education for Sustainable Development's definition as the foundation for our project moving forward. Thus, our working definition of sustainability was:

"Sustainability is meeting present needs without compromising the ability of future generations to meet their needs. Sustainability is a holistic approach to living and problem solving that addresses ecological health, social equity, and economic prosperity for present and future generations" (USPESD, 2009)

The second step in our process was to differentiate between a sustainability curriculum and a sustainable education. A series of discussions resulted in the following distinctions.

Sustainability Curriculum

A sustainability curriculum is a core curriculum arranged by units. It is a curriculum that integrates concepts in sustainability into the more traditional course subjects, namely Literacy, Math, Science, and Social Studies. Above all, a sustainability curriculum is meant to enhance the learning experience for teachers and their students by simultaneously making material in traditional subjects easier to comprehend and retain through a sustainability perspective.

Sustainable Education

A sustainable education, on the other hand, requires developing mechanisms that will allow MS 88 and its faculty to continue using this curriculum for years after its creation. A sustainable education must be related for students of all ethnic backgrounds, socio-economic levels, as well as students' different preferences for learning material. After discussing at length, we agreed on creating a definition of sustainable education that was based on the U.S. Partnership for Education for Sustainable Development and the Brundtland Report, a report published by the United Nations World Commission on Environment and Development in 1987 (UN, 1987).

Our final working definition of sustainable education resulted as:

"Providing students with skills and knowledge for living that address the interdependence of community, economy, and environment while allowing future generations to meet their needs."

Figure 2: This graphic illustrates our team's concept of sustainability and its integration of the environment, community, and economy.

These distinctions clarified our team's direction for this project. Thus, the overarching task was directed towards creating a sustainability curriculum and making education more sustainable at MS 88. Our deliverables would be detailed curriculum units spanning the entire academic year for grades 6-8 as well as a management plan. However, this required extensive research and time in order to develop these end products.

Primary Research

The main component of our primary research was to become very familiar with local, state, and national education standards as well as standards that specialized in sustainability and science. Education standards serve as a guide to public school administrators and faculty. The purpose of taking standards into consideration is to ensure that students nationwide are at the same level of knowledge and competence. State and national tests that students take each year are based on the expectations of education standards.

As MS 88 follows these education standards in their traditional curriculum, our sustainability curriculum would also have to follow these standards. We divided our team into pairs in order to research the following education standards:

The Common Core State Standards Initiative

The Common Core State Standards are national standards that have been adopted in 45 states, the District of Columbia, four territories, and the Department of Defense Education Activity. In July 2010, New York was the 26th state to adopt these standards and New York City public schools are expected to follow the Common Core (NGA, 2010). Because MS 88 had recently begun integrating the Common Core standards to existing curriculum, it was a convenient time to also start integrating a sustainable curriculum that also followed these standards. They provided the foundation for our curriculum. These national standards provide extensive guidelines in English Language Arts (Literacy and Social Studies) and Mathematics (NGA, 2010).

New York State Standards

The New York State standards follow the national Common Core state standards very closely. To prepare New York State students for the college and career readiness tracks, these standards were adopted in January 2011. They are the result of collaboration between the state's teachers, school administrators, and content experts (NYCSED, 2013). We familiarized ourselves with the New York State Standards to ensure that our sustainability curriculum would follow the same academic guidelines as MS 88's existing curriculum.

Next Generation Science Standards

The Next Generation Science Standards highlight the essential ideas and practices in science that students nationwide should learn to prepare for college and their careers. Unfortunately, the Next Generation Science Standards were under revision during the entirety of our project. They were released in mid April 2013, and we were not able to effectively incorporate them into our work for the client. However, the MS 88 faculty should certainly take them into consideration when adapting sustainability concepts to their curriculum to ensure the necessary integration of Science, Technology, Engineering, and Math (STEM) education (Achieve, Inc., 2011).

U.S. Partnership for Education for Sustainable Development

As an effort inspired by the UN Decade of Education for Sustainable Development, the U.S. Partnership for Education for Sustainable Development standards provide overarching sustainability themes to incorporate into an interdisciplinary curriculum. The goal is for K-12 students to become "sustainability literate" through the themes of economic systems, personal action, ecological systems, collective action, social and cultural systems, intergenerational responsibility, and interconnectedness (USPESD, 2009).

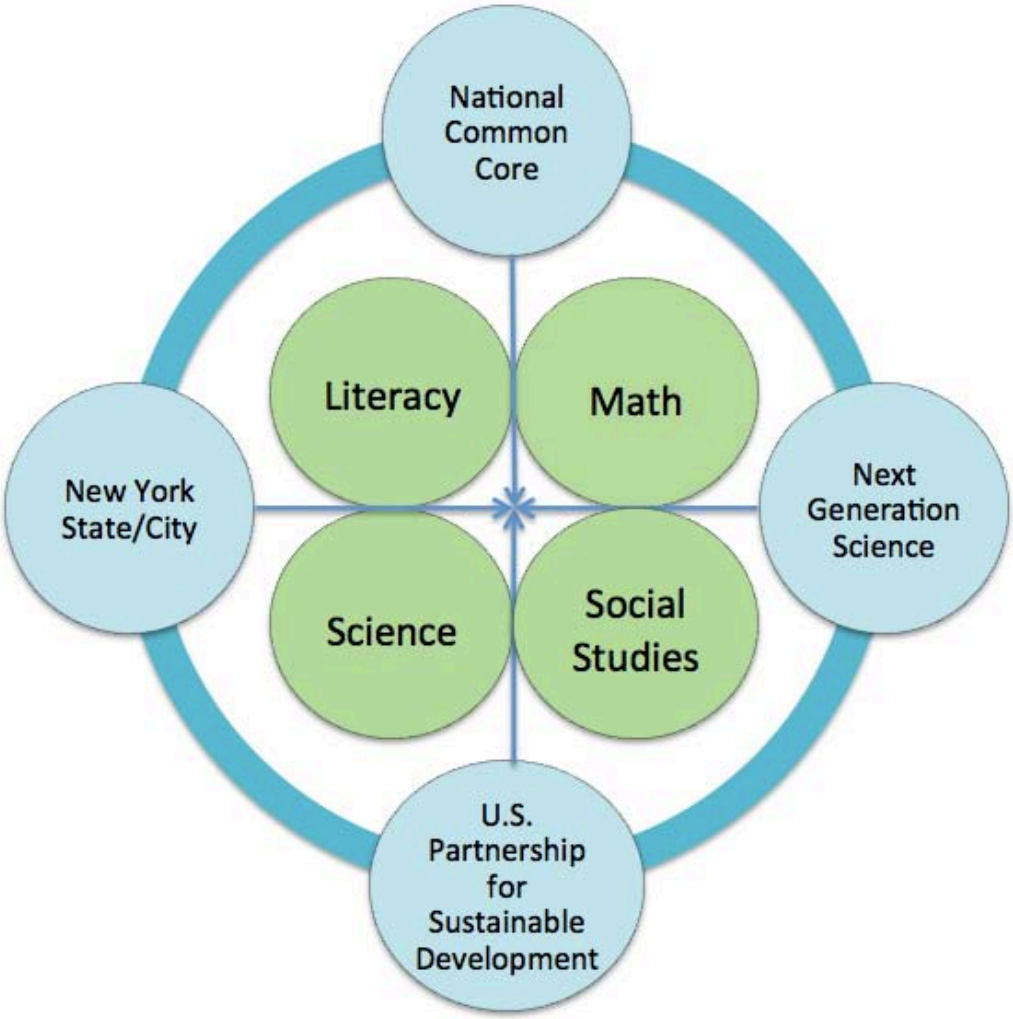


Figure 3: This graphic shows how local, state, national, and sustainability education standards can be applied throughout all academic subjects.

Secondary Research

Before creating our own sustainability curriculum for MS 88, we wanted to research other pioneering schools and programs in the United States that already had established and thriving curricula. This research helped us conceptualize how to integrate all of the aforementioned standards into the school's current curriculum while creating an additional curriculum based on sustainability.

Iowa

MS 88 used Iowa as a reference when integrating the national common core standards into its curriculum. In order to properly apply these national standards to MS 88's core curriculum, the school used Iowa as a resource to follow. While

organizing the school's existing curriculum and during the development of our own sustainability curriculum, we referred to how Iowa effectively organized its curriculum with the national common core standards (IDOE, 2010, 2011, 2013).

Vermont

The Vermont State Standards have already included sustainability as a component of necessary curriculum to teach statewide. Vermont is also home to a handful of private schools with rigorous sustainability curricula, such as the Sustainability Academy at Lawrence Barnes, an elementary school, and the Putney School, a boarding high school. We used Vermont as a model when applying the U.S. Partnership for Education for Sustainable Development standards to the process of creating an original sustainability curriculum (VAE, 2013).

Expeditionary Learning

Expeditionary Learning is a New York City nonprofit that brings together school administrators, parents, and faculty from NYC's school districts. MS 88 follows the Expeditionary Learning model, which promotes project-based learning, strong adult-student relationships, and professional development for teachers. Schools that have followed this model are usually considered high achievement, in that their test scores are higher than the district average. Our team researched expeditionary learning in order to ensure that our sustainability curriculum would be consistent with MS 88's existing curriculum (EL, 2013).

PARCC

The Partnership Assessment of Readiness for College and Careers is a team comprised of 22 states and the U.S. Virgin Islands that brainstorm better ways to assess students, to use technology, and to support teachers in order to prepare students for college and their careers (PARCC, 2013). PARCC provides recommendations for improving the Common Core State Standards. New York is currently a governing state in the PARCC Consortium. Considering New York's leadership in this organization as well as PARCC's influence on the Common Core State Standards, we found it useful to stay informed on PARCC's role in education policy (PARCC, 2013).

STEM Education

Science, Technology, Engineering, and Math Education uses New York State math standards to promote student achievement in math and science. STEM education is meant to be interdisciplinary in order to better engage the attention of students, especially those who have difficulty with this genre of curriculum. Because our sustainability curriculum aimed to enhance student understanding in all subjects through the lens of sustainability, it was necessary to educate ourselves about STEM education (Hazen, 2009).

Integrated Projects Week (IPW)

Integrated Projects Week[1] was developed in conjunction with MS 88 and the Center for Environmental Research and Conservation, Earth Institute, beginning in 2005, and has since become a cornerstone of educational design and delivery at MS 88. Currently, IPW occurs twice during the academic year, once in December and once in June. In order to keep students engaged in school between the completion of state testing and the onset of winter/summer vacations, the IPW is meant to be a longer, more intensive project that ties material from all subjects together in a 40 hour, week-long project that requires teamwork and hands-on learning. Examples of an IPW project include: *Invasive Species: Pre- and Post- Conquistador Mexico*; *What's in that Pond? Noise Pollution*; and *A Blueprint for My Life.*

The entire school participates in IPW. This curriculum unit is a combination of classroom work, field trips, guest speakers, and workshops; students must complete concrete deliverables. These include display boards and blogging, e-journals, video documentaries, scientific posters, reflections and other active learning mechanisms.

At the end of the week, a Showcase celebration brings together the full community including custodians, security- and support-personnel, faculty, students, parents (and guests). Students and teachers visit each exhibit, performance or presentation. All are engaged to praise, document, and assess the creativity and skills of students.

IPW offers a perfect opportunity to build in-depth knowledge and skills and educational activity that will be concretized through PBL. And, importantly, New York City is used as the "living laboratory" of both the human impacted natural environment and human built environment for both kinesthetic and visual learning. Finally, IPWs' often involve some form of community service.

We used examples of IPW projects as a resource while creating our sustainability curriculum. As a result, we decided to include an original, integrated unit project at the end of each unit to serve as a less time-intensive version of the IPW. Because the IPW is often times the students' favorite activity of the year, the team thought it would be an effective learning tool for students to experience this project-based style of learning many times throughout the academic year, instead of only twice.

[1] Integrated Projects Week (IPW) was born out of work by Drs. Marc Meyer and Nancy Degnan, then Executive Director of the Center for Environmental Research and Conservation (CERC) of the Earth Institute. This work was funded by the Robin Hood Foundation, NYC. Marc Meyer was the Director of Research for the School at Columbia, part of whose mission is to promulgate best practices in pedagogy as well as in content and skills development in secondary education. Since IPW was introduced into MS 88, a four-year NSF funded program, Technology Research Ecology Exchange for Students (TREES) has advanced IPW to six other Title I and Title III schools within New York City.

Curriculum Matrix Compilation

Finally, after familiarizing ourselves well with the numerous standards and the other pioneering programs in the country, it was time to begin the process of creating our own sustainability curriculum. Although we wanted to jump straight to brainstorming ideas about specific lesson plans and creative projects, there were many essential steps to perform first.

First we compiled MS 88's curriculum in Reading, Writing, Math, Science, and Social Studies for 6th, 7th, and 8th grades. This task included researching which topics were taught during the year as well as aligning subjects and unit topics by month in an excel spreadsheet. For example, as shown in Appendix III or Figure 4 below, 7th grade students learn about science fiction, literary essays, geometry, matter and energy, as well as national independence in the month of December.

Subject	December
Literacy (Reading)	Theme: Science Fiction/ Dystopia Aim: To understand Character and Inferences
Literacy (Writing)	Theme: Literary Essay Aim: To write expository essays advancing an idea about a piece of literature
Math	Theme: Geometry Aim: To understand Spatial Visualization
Science	Theme: Interaction between Matter and Energy Aim: To understand how properties and interactions of matter and energy explain physical and chemical changes
Social Studies	Theme: A New Nation Aim: To understand the new nation's response to independence

Figure 4: This table provides a cross section of the curriculum matrix that we compiled. The curriculum matrix essentially outlines which topics students learn in specific classes during the academic year as well as the standards that apply to this subject matter.

Finally, it was essential to apply the appropriate standards to the topics that the students were learning in each unit. This was to ensure that the standards, in particular the Common Core Standards, were covered in their entirety throughout the year and that the students would be at the same competitive level as other students in the nation. More information detailing the curriculum matrix is available in the next section.

Time Management

A reliable time management plan is essential for the implementation of any project or activity. Effectively managing the amount of time staff members spend on particular project components is crucial in completing deliverables on schedule and for accurately estimating the financial budget of a program. Our consulting team has graphically represented the total person-hours needed to complete each phase of the curriculum. Recorded hours are separated into several categories; full group meetings, research, creation of the standards matrix, and curriculum unit completion and IPW formation which were further separated by individual and small-team hours.

Several assumptions were made in formulating our time management figures. The time spent on several parts of our final deliverable is not necessary for MS 88 staff to complete. This includes:

- The effort involved in producing our midterm presentation, final presentation, and final report. Teachers at MS 88 are obviously not responsible for these deliverables.
- The time spent by our two student managers, Jessica Donohue and Cozette Csoke, organizing work plan documents, group meetings, and deadline requirements. Their overall project guidance was not included.
- Our faculty advisor, Nancy Degnan, acted as a guiding influence during the entire semester process but would be synonymous with the Principal and/or Assistant Principal at MS 88. School leadership offers advice and general guidance during any curriculum development at M 88, but it would not be a direct part of the process and is therefore absent from the time-management/financial plan.
- Any time spent during our full-group meetings that did not specifically pertain to unit curriculum development and/or the creation of the curriculum matrix.

Task								
Team Member	Total	Full Group Meetings	Research	Matrix Compilation	Unit Creation (Individual)	Unit Creation (Team)	Unit Project (Individual)	Unit Project (Team)
Nancy Degnan		Faculty Advisor						
Cozette Csoke		Manager						
Jessica Donohue		Manager						
Erin Entler	48	20	8	4	6	6	2	2
Mashael Fakhro	47	20	8	4	8	6	1	0
Sarah Finn	42	20	4	6	6	4	1	1
Peter Leung	43	20	5	4	5	6	2	1
Parisa Mahdad	56	20	5	10	10	8	2	1
Anastazia Neely	47	20	4	6	4	6	3	4
Kim-Chi Nguyen	58	20	8	6	10	8	4	2
Patrick Niemeyer	50	20	4	6	10	4	2	4
Frank Reig	46	20	6	4	4	6	4	2
Net Total	**437**	180	52	50	63	54	21	17

Figure 5: This spreadsheet details the hours that our team spent on the project's tasks. This compilation is meant to give faculty and school administrators an idea of the time commitment involved in creating a sustainability curriculum.

It is crucial for MS 88 to have reliable time management figures so that they can forecast the financial budget needed to plan and implement an integrated sustainability curriculum. As illustrated above, the total person-hours spent in developing the final deliverable totaled 437 hours. However in translating this total into a realistic estimate for MS 88, several modifications must be made:

- The superior real-world educational experience that teachers possess as compared to Graduate Student Consultants. For example, the amount of time spent creating a curriculum matrix (our team has already taken the time to compile all standards onto one "living" document) or researching various education models, curriculum standards, and case studies of other schools that have implemented integrated curriculums will be significantly lower for MS 88 educators.
- The proficiency of teachers in creating unit plans and IPW curriculum is obviously higher than that of our team, but educators must also create specific daily lesson plans, a task that will surely take a great deal of time and erase any differences in their greater efficiency.
- Teachers at MS 88 also have more than three teams developing curriculum and lesson plans. There is a group of educators assigned to each of the core subject areas of Reading, Writing, Math, Science, and

Social Studies as well as Special Education, which represents a total of at least fifteen teachers. This implies that our time figure must be multiplied by a ratio of 15/9 to estimate the final total.

Due to the additional workload of daily lesson plans while taking higher teacher efficiency into consideration, the 437 hours spent by our team (after subtracting the hours spent on the matrix compilation and background research from the net total) is an accurate assessment for MS 88. However, the 437-hour total must be recalibrated for a fifteen- member team, bringing the total to 550 hours. *By using the above estimates, MS 88 leadership will have to budget for approximately 550 person-hours over the course of the year.*

CURRICULUM MATRIX AND CURRICULUM UNITS

Introduction

The curriculum matrix is a resource that we created to serve as a reference guide throughout the development of the completed curriculum units. The curriculum matrix was designed and compiled during the first half of our process which was dominated by extensive research and brainstorming. On the other hand, the curriculum units are a deliverable, which were produced during the second half of our work plan. Thus, the curriculum matrix was used as a means to produce an end, which is the sustainability curriculum for an academic year in grades 6-8. Because the sustainability curriculum is the focal point for the management and financial plans, the curriculum matrix served as an essential component in producing the final products for MS 88.

What is a Curriculum Matrix?

The curriculum matrix, featured in Appendix III, is an excel spreadsheet divided into 6th, 7th, and 8th grade sections. We organized the matrix by class subject on the y-axis and by month on the x-axis. Within this framework is each unit in chronological order. Each unit is represented by a cell that outlines the following:

Unit Theme: The general material topic that students will be learning in that specific class.

Essential Question: An overarching question or statement that specifies what the teacher wants the students to be able to answer or understand by the end of the unit.

Relevant Standards: The national, state, and sustainability standards that apply to that individual unit's content.

The curriculum matrix's purpose, therefore, is to give an overview of what each grade will be learning in each of their classes and at what point in the academic year. It also confirms that all standards are represented and followed at some point in the semester. This information is invaluable when creating an integrated sustainability curriculum that is meant to be interdisciplinary while embodying several different education standards simultaneously.

Curriculum Units

One of our primary deliverables was an academic year of curriculum units for each grade. A curriculum unit details the material that will be taught in a 6-8 week period of school. Our sustainability curriculum took the unit themes, essential questions, and relevant standards that we compiled in the curriculum

matrix and used this information as the foundation for creating a sustainable curriculum.

Our team divided into three groups to complete units for each grade. First, it was each group's task to brainstorm lesson ideas that focused on sustainability while incorporating the subject matter covered in the other classes. Second, each team chose the specific sustainability standards that encapsulated these lesson ideas. Finally, using the curriculum matrix as a reference, each team input the following information into a unit template:

Integration Map: The integration map is a unit diagram, as featured in Figure 6 below, which provides an overview of the topics covered in each class as well as the two, most relevant sustainability standards that apply to this unit.

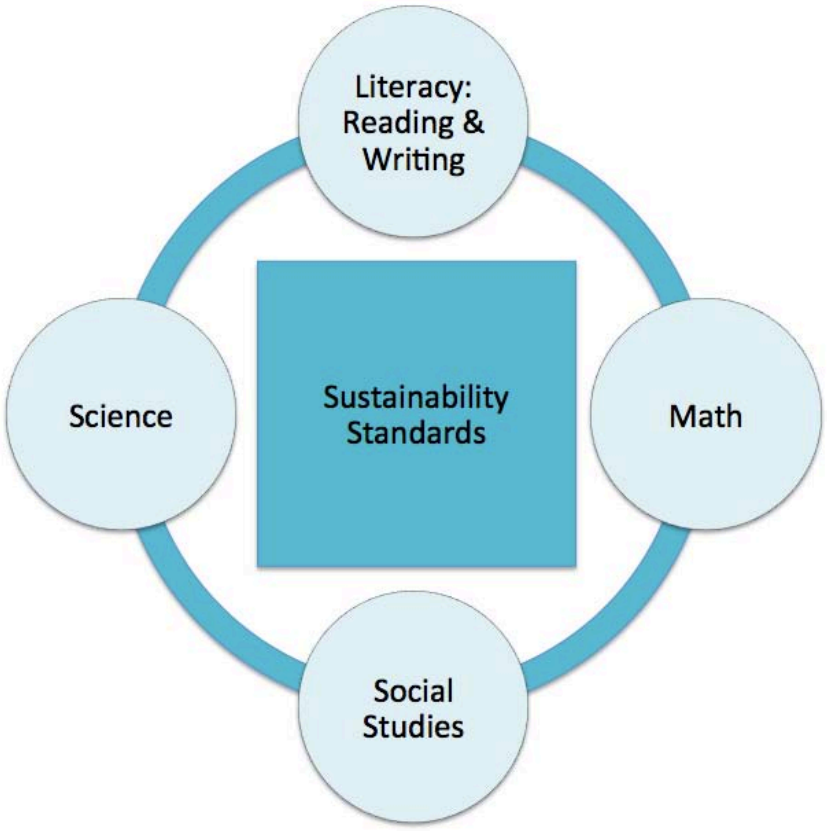


Figure 6: The integration map template above shows which specific topics are covered in each subject of a unit along with the two sustainability standards, taken from the U.S. Partnership for Education for Sustainable Development, that correspond most appropriately. Each unit has an integration map. See Appendix IV for a full view of all the curriculum units.

Paragraph Explanation of Integration

The paragraph explanation of integration briefly summarizes how each topic covered in each class is interconnected through sustainability.

Sustainability Integration

The sustainability integration section outlines the two sustainability standards, sourced from the U.S. Partnership for Education for Sustainable Development, that most appropriately relate to each individual unit's curriculum. Furthermore, a "Sub-standard and Concept" extracts a component of the general sustainability standard that more specifically applies to the curriculum in this unit. In this section, we also list the essential question, taken from the curriculum matrix, as well as the "Activity/Lesson Idea" which is our team's original lesson idea that incorporates sustainability with the existing curriculum.

Daily Plan/Time Management

This section of the unit plan is a ten-day calendar template provided for the teacher. Faculty can fill in the calendar with their own day-to-day essential questions to be covered for each subject. However, it can be used in whichever fashion that the teacher feels most helpful for them.

Integrated Unit Project

The integrated unit project is an opportunity for teachers to expand on a specific activity at the end of each unit. We have provided our own original suggestions for integrated unit projects that the teachers can use in their lesson plans. The integrated unit project may also be used as an IPW for the months of December or June, the typical months designated for the IPW.

Curriculum Standards Addressed

This section outlines the precise Common Core National standards, New York State standards, and Next Generation Science standards that apply to this unit's curriculum. Instead of having to reference different sources, the teachers have convenient access to the specific standards and their descriptions in order to ensure that all recommended guidelines are followed while implementing our sustainability curriculum.

Finally, the curriculum units are meant to provide an all-in-one resource for teachers and administration. With this document, teachers are conveniently guided through the details of a sustainable curriculum, unit by unit, without the need to reference other supporting documents or websites.

MANAGEMENT PLAN

Introduction

The process of creating a sustainable and integrated middle school curriculum is challenging and often quite complicated. New staff, staff development, and educational materials, which include off-campus field trips and events, are the main inputs in creating such a curriculum. It is important to outline exactly how much of each input it takes to create a sustainability curriculum that is also sustainable into the future. To make the curriculum sustainable into the future, we must create a management system. We must ask questions such as: What will this sustainability curriculum look like? What will go into and come out of a sustainability curriculum? How will this curriculum realistically be implemented? How can we improve each year's sustainability curriculum and make subject integration more seamless? It is important to foster an environment of improvement and constant re-evaluation in order to make the curriculum as successful and sustainable as possible for future middle school students. Measurement is key to effective management, thus it is key to evaluate the inputs, outputs and outcomes in the process of creating a sustainability curriculum. The Park Slope Education Complex, Middle School 88, is uniquely positioned to take on a demanding but rewarding alteration to their curriculum. This program change requires commitment and responsibility on many levels, and MS 88 has already implemented cutting-edge educational techniques to improve its education system. This makes MS 88 the perfect candidate for implementing a highly integrated sustainability curriculum.

To make the proceeding sections as clear as possible, the definitions for key terms are provided below:

Measurement - The measurement component defines what performance-relevant information should be collected. Typically, such information includes measures of input, process, and impact.

Collection - The collection component defines how the information is collected. It deals with such issues as, who collects the information, how is it collected, how frequently, and how is the information stored and retrieved?

Reporting - The reporting component defines how the performance measures are presented, to whom, and in what form. It answers such questions as: what level of decision-maker needs what degree of detail, and how frequently do they need this information?

Feedback - The feedback component defines how the information will be used to modify organizational behavior: how mid-course corrections will be made, under what circumstances, and who can make them.

New Staff

The people who participate in creating a sustainability curriculum are the most important component of this process. Their passion for integrating sustainability is the impetus behind the creation of this curriculum, and their ideas and contributions to the process are what make it happen. It is important to have motivated, positive, and forward thinking people as the leaders of this sustainability curriculum program. This passion will trickle down to faculty, and hopefully, to students.

Inputs: New Staff

Sustainability Manager – Leader of the program, all new staff and existing faculty working on sustainability curriculum report to this individual. Responsible for the oversight of the curriculum and solving any problems that arise, as well as for the performance management and improvement of the curriculum over time. A competent, pro-active, and up-to-date expert in sustainability issues adds great value to the School Leadership Team.

Academic Specialist – This faculty member will provide internal advice regarding the sustainability curriculum's progression. This faculty member should be an education professional who is well versed in Common Core standards and U.S. Partnership for Education for Sustainable Development standards and who also has passion for environmental issues intertwined with education.

Partnership Coordinator – New York City houses a growing community of sustainability-focused organizations. Nonprofits, corporations and university organizations comprise a network of socially and environmentally conscious organizations and individuals. A faculty member at MS 88 who has inside knowledge and existing relationships within such organizations would strengthen the ideas coming from the community, contributing to MS 88's sustainability curriculum. This faculty member would also be responsible for the communications and public relations that MS 88's new sustainability curriculum will require. It is important to reach out to the community to raise awareness of MS 88's next steps in making their curriculum sustainable and fully integrated. This faculty member must also properly manage the public/parent/education sector's response to this drastic change in curriculum. Often, the public does not respond well to drastic changes, so it is necessary to have someone responsible as a spokesperson and who also has good connections in New York City's sustainability world.

Research Assistant – Responsible for researching emerging sustainable curriculum and integrated curriculum techniques, including best practices used

by schools across the nation and new organizations or ideas that are on the cutting edge of sustainability education and integrated subject education.

Outputs:

- Weekly meetings among sustainability staff to assess progress and to address questions
- Direction and sense of purpose from Sustainability Manager
- Organization of the integrated/sustainable curriculum sector
- New partnerships to aid in curriculum development and improvement
- Constantly updated research documents on cutting edge sustainability education ideas and techniques
- Increasingly integrated curriculum maps
- The consistent inclusion of evaluation rubrics (and their review to ensure ongoing improvement) at the faculty and student level to capture increasing knowledge about and practice in sustainability

Outcomes:

- Inspiring and innovative leadership
- Ability to act and respond quickly with sufficient information due to improvements to the staff organization
- Collaborative, cooperative and positive working environment for staff
- Less pressure on faculty to innovate in terms of integration and sustainability
- Professional fulfillment for taking on leadership in a new field and taking on an issue that is bigger than themselves, in addition to intellectual stimulation
- Emergent knowledge in science and sustainability
- Improvement on STEM programming by providing broader impacts

Measurement:

- Costs of hiring new staff
- Evaluations of new staff from existing faculty, students and parents
- Survey results from existing faculty, students, and parents on how the sustainability curriculum is doing and whether it has a positive or negative impact on students/learning

Collection:

- The Financial Manager and the Principal will evaluate costs of hiring new staff at the beginning of each year. This will be re-evaluated each year depending on survey results and personal opinions of the efficiency of the

new staff.

- Evaluations of new sustainability staff will happen three times a year by faculty through email surveys, twice a year by students in class in paper format, and once a year by parents through e-mail or by mailing it home. Evaluations will be administered, including compilation and analysis of data by a member of the principal's cabinet. This is an extensive task, and thus it may be more feasible to administer four times in a pilot year and two times in subsequent years. The pilot will be the foundation, and over time, the system will gain efficiencies, and the evaluation can occur less often.
- Survey on the sustainability curriculum's impact will be administered twice a year by sustainability staff. The survey will be through email to faculty, in school in paper format to students, and e-mailed or mailed home to parents.

Reporting:

- The costs of hiring new staff would be presented to the Principal by the Financial Manager.
- Sustainability staff evaluation survey results will be presented to the principal by the administrators responsible for the survey. The administrators of the survey will not be a member of the sustainability staff in order to maintain unbiased feedback.
- Sustainability curriculum survey results will be presented to the Principal and any other key player whom the principal believes should be involved. This will be a part of how the sustainability curriculum's success is evaluated, to ascertain the effectiveness of the investments of personnel, resources (among these, time). as well as to determine if the investment into the curriculum continues to be sound.

Feedback:

- The principal can use the survey results to inform mid-year corrections and improvements, if these exist, for purposes of improving both processes and the allocation of staffing strengths and talents.
- The survey as well as observations will show whether these corrections are necessary.
- If the new staff received poor reviews from the various stakeholders surveyed, new hires will be necessary, in addition to reporting or process changes in the management system.

Staff Development

Another important aspect of developing an integrated and sustainable curriculum is the time that it will take staff to collaborate and come up with ideas that go into creating, teaching and implementing this curriculum. New staff and existing faculty will need to invest their time and brainpower in creating and implementing a new curriculum. The existing faculty may already have ideas, while the new staff will likely have different ideas. This collaboration of ideas will be challenging and time consuming, but the creation of coherent goals and concrete ways to achieve these goals are key to the success of a sustainable and integrated curriculum.

Inputs

Existing Faculty - These individuals are arguably the most important factor, as they are interacting with students on a daily basis, and thus are the true implementers of this project. Currently, the organizational culture at MS 88 is one of commitment and innovation. The school's leadership and faculty are dedicated to designing and implementing STEM and sustainable curriculum strategies that will advance their own understanding and capabilities with the curriculum and which will achieve high student performance. It is likely that the first full year will be comprised of several intersecting feedback mechanisms coming from deep focus and analysis while simultaneously ensuring that students are learning what they need to learn. The work involved in the pilot will need to be undertaken while also fulfilling all existing professional responsibilities. Ensuring that enough existing faculty is present to engage in the highest quality design, development, delivery, and assessment of the sustainability curriculum is essential to the broader objective of staying sustainable at the organizational level and in the longer term. Thus, frequent and clear communication with the existing faculty with regard to the requirements, scope, duration, and objectives of the first year of this sustainability curriculum is critical.

Preliminary work - using current core curriculum, common core standards, and sustainability standards as a launching pad for new sustainability staff and existing faculty

Initial conference - bringing together new staff, various administrators, and a few existing faculty from each grade to create an initial plan for implementing a sustainable curriculum

Collaboration sessions will be periodic meetings during the implementation period (throughout the year) to assess progress.

Final Retreat will bring together the same people from the initial conference. Faculty will discuss revisions and improvements to the curriculum that have come to light after attempting to implement the curriculum

Outputs:

- Curriculum map including common core standards and sustainability standards, including preliminary curriculum/sustainability standard integration work, and increasingly integrated curriculum maps
- Concrete, collaborative ideas on how to begin an implementation of an integrated, sustainability curriculum in the classroom from the initial conference

    - Teams from the initial conference will come up with at least three approaches to integrating subjects and incorporating sustainability. Different teachers can take different approaches to informally "test" which approaches work best and seem to result in the most well-rounded and integrated sustainability teachings.

- Periodic changes to the integrated and sustainable curriculum including introduction of emerging ideas and concepts that will improve the curriculum mid-course
- Output from the final retreat will be an overhaul of the year: an intense evaluation of what was accomplished over the year, what went well, what went poorly, and what can be done to improve next year
- New implementation plan for the next year with these improvements
- Cost in hourly time spent by existing teachers outside of classroom hours planning their new lessons
- Short and medium term plans to define and articulate the role of the school as a community and its contribution to the community
- The consistent inclusion of evaluation rubrics (and their review to ensure ongoing improvement) at the faculty and student level to capture increasing knowledge about and practice in sustainability

Outcomes:

- Original ideas (documented and organized) about sustainability education and its improvement
- Mid-course improvements on sustainability curriculum
- Evaluation of implementation including ideas that worked and those that did not
- Progress and improvements
- Growth in knowledge for each faculty member and communication among faculty

- Professional fulfillment for taking on leadership in a new field and taking on an issue that is bigger than themselves

Measurement:

- Cost of preliminary work by graduate students, current teachers, and the Principal's administrative assistant ($5,000)
- Cost of initial conference (20 adults, $7,000)
- Cost of out-of-classroom collaboration sessions (10 sessions, 3 hours per session, 30 hours per person – graduate students and teachers, $20,000)
- Cost of final retreat (20 adults, $7,000)

Collection/Reporting:

- Principal's assistant will plan the events, estimate the costs for both retreats, and must approve the final cost. The Principal and Financial Manager must be involved in the event planning process.
- The Principal and the Financial Manager will determine the stipend amount for graduate students' preliminary research.
- The Principal and Financial Manager must approve the overtime amount paid for faculty in the out-of-classroom collaborations.
- The Principal and Financial Manager will both approve costs of implementing new ideas into the curriculum on an as needed basis.

Feedback

- The Principal will determine whether the retreats were effective, and whether they are necessary for the following year.
- The Principal will also determine whether 30 hours is sufficient for the periodic collaborative meetings, and how many faculty are needed for these meetings (whether there were too many or not enough).
- Preliminary research will be a one-time action, as the Research Assistant of the new sustainability staff will be conducting further research on sustainability standards and ideas.

<u>Educational Materials (including student travel and field trips)</u>

Finally, it is important to evaluate the costs of the extra materials that will be necessary to implement a sustainable and integrated curriculum. New text and library books are just the beginning. There are new technologies and services emerging that enhance an integrated education as well as an environmental education that could be deemed crucial to this curriculum.

Inputs:

- Additional school supplies, including textbooks and the purchase of library books, that would be necessary for implementing a sustainable integrated curriculum
- Educational software that new sustainability staff and existing faculty believe is necessary for integrating a curriculum or improving sustainability curriculum
- Field trips (including time taken to plan the field trip, transportation, admission fees, tour fees, and lunches)
- Any additional cost to implement new educational programming and ideas

Outputs:

- Increasingly integrated curriculum maps
- Unique yet defined skill set for students

Outcomes:

- New forms of learning, increased sustainability learning, and new ways to integrate across subjects
- Student excitement in new adventures, whether it be through field trips or new forms of in-class connections
- Increased student engagement across subject areas through field trips

Measurement:

- Cost of additional school supplies and books (Supplies $3,000+Library books $2,682+textbooks $34,271). These numbers are based upon figures from 2011 that Principal Ailene Altman Mitchell of MS 88 provided.
- Cost of educational software ($36,412 – this number originates from a "High School for Sustainability" model that was created in 2011. It does not account for changes in inflation).
- Cost of out of class field trip excursions ($2,100 – from High School for Sustainability)

Collection:

- The principal's assistant will collect this information
- Faculty and sustainability staff will plan the new field trips and consult on which materials and software are best for the new curriculum

Reporting:

- The principal's assistant will report the financial information to the financial manager and the principal, who will approve or renegotiate the costs

Feedback:

- The new sustainability staff, existing teachers, and principal will meet to discuss the new materials (new textbooks/educational software), additional out-of-class excursions, and any costs to new educational program ideas in terms of their respective effectiveness in students' sustainability and integral educations.

Teacher Performance Evaluation

Another important aspect to this management system is the evaluation of success of this integrated sustainability curriculum. Faculty who are at the ground level, teaching students each day, need to be able to determine how well students are absorbing material and whether these students are truly benefitting from an integrated sustainability curriculum. Essentially, it is important to know "how you are doing" in teaching an integrated, sustainable curriculum. Some initial questions and suggestions listed below are offered as a starting point for MS 88 Faculty in the process of assessing impacts of a sustainability curriculum. Notably, these questions begin the process of assessment as a self-reflective one, but are intended to also inform summative and formative assessment rubrics if deemed appropriate by the Principal and the faculty. Finally, the questions may be useful when the Principal and Cabinet of MS 88 want to assess the quality of resource provision and programming contracted through outside nonprofit or academic organizations engaged in sustainability activities.

- Are all standards adequately represented in the curriculum and are these driving the content and skills of the curriculum?
- Are students absorbing the sustainability curriculum?
- Are the students picking up on the integration among subjects?
- How well is the curriculum being implemented?
- How much time do we, as faculty, spend planning?
- And, is this planning time sufficient in both quantity and quality?
- Do we, as a faculty, believe that students are learning about sustainability?
- How does the curriculum affect students?
- How has it affected us as a faculty?
- How well are we, as a faculty, teaching the integration/sustainability aspects?

- To what extent are the integration and sustainability aspects being integrated, given the requirements of high stakes testing and other demands/constraints, opportunities?

Measurement

The effectiveness of faculty in teaching integrated, sustainable curriculum can be measured by faculty and administration self-evaluation as well as student evaluation surveys. The faculty surveys will involve questions such as those listed above and should capture, where possible, concerns and problems in addition to positive aspects. However, we also encourage that anyone voicing concerns/problems also design solutions for faculty consideration. These open-ended questions can be anonymous.

The student surveys should be designed with specific questions about the unit to ascertain how well sustainability was integrated and to ensure that sustainability standards were met. Students can also benefit by use of a self-evaluation that seeks to measure how much they learned about sustainability concepts. This should not be a stressful test for the students, but rather, open-ended and potentially even fun for them to take. The team writing this report believes that student and faculty/administrator surveys are extremely important and care needs to be taken in their design to capture highest quality data and information.

Collection

The students and the teachers will take these surveys at the end of each unit. The Administrative Assistant to the Principal will administer the surveys, with the help of the lead teachers for each grade and subject. This person will also gather the data from the surveys and compile it into a report, with the help of the Academic Specialist of the sustainability staff.

Reporting

The survey results will be presented to the sustainability staff and the Principal.

Feedback

The results of these surveys will be discussed between the Principal and the Sustainability Manager. They will decide how the program is doing from the students' perspectives, and how well the teachers are administering it. Staffing decisions will be made from here. While it is important to remember the teacher evaluation is a self-evaluation, and thus could be somewhat biased, it should

also be taken seriously by the teachers as well as by the Principal and the Sustainability Manager.

This management system is in place to help Middle School 88, and other schools, attempt to incorporate an integrated, sustainability curriculum, which we believe will lead to an eventually very sustainable curriculum. Interdisciplinary work and sustainability education are key for students to understand in order to achieve success in the future. Economic, social, and political systems are all dependent on environmental issues and sustainability solutions, and learning to communicate across disciplines will be essential to creating a sustainable world.

Financial and Marketing Plans

The financial plan as it pertains to the sustainability curriculum at MS 88 is a sub-set of the management plan. The financial plan provides an overview of the resources (both human and physical) required to implement the curriculum as we have designed it. The key, limiting factor with regards to which items of the sustainability curriculum can be installed is the actual amount of municipal funding allocated to MS 88. Thus, the sustainability budget as presented in this report should be used in conjunction with the school's overall budget. It is quite possible that not all activities and resources recommended in the sustainability budget may be implemented due to limited funds.

Annual Expenses

We categorize expenses into three major categories, which are subsequently broken down into specific line items. The three cost categories are:

- Leadership
- Events and Conferences
- Overhead and Supplies

As expected, the largest portion of cost is derived from the 'Leadership' function, totaling approximately $266,000. This includes expenses incurred to bring on new staff, provide stipends to existing staff, and compensate research and development work completed by graduate school consultants. The second most costly category is 'Overhead and Supplies' with an estimated total cost of $76,000. 'Events and Conferences' cost $36,000.

Leadership

Within the 'Leadership' cost category, the primary expense comes from the recommendation to hire four full time staff to develop, implement, and launch the Sustainability Curriculum. While this is our recommendation, we understand the tight budget restrictions of MS 88. Suggestions to mitigate these costs include amalgamating two (or more) positions into one. For example, MS 88 may combine the Partnership Coordinator position and Research Assistant position into one role and hire an individual with both stakeholder engagement and research skills to ensure that the unique responsibilities required of these two positions are covered in one position. Another suggestion to make efficient use of funds is to outsource research and development work to a select team of graduate students. In doing this, MS 88 may be able to eliminate a full-time position in place of a part-time position, while supplementing with graduate consultants. The use of outside 'cost-efficient' consultants also offers the benefit of directing the collective knowledge and 'brainstorm' power of a team of

individuals on the periphery of MS 88's operations to offer leading edge thought. There may be benefits from receiving continual feedback from consultants that are knowledgeable of the program, but are not involved in the daily operations of MS 88. These benefits include staying current on the 'best practices' with regards to sustainability ideas and the expertise of each graduate student in a specific environmental topic (i.e.: biodiversity, climate change, marine science, water sustainability, ecological preservation). In other words, a team of (graduate) consultants provides the *breadth* of sustainability knowledge. In addition, it provides MS 88 with a link to leading academics and sustainability professionals at Columbia University or another university located in the New York City metropolitan area.

Events and Conferences

This category of expenses, while the least costly of the three, is critical in the implementation process. It provides the funding for a diverse forum for thought sharing, which is key in developing a novel program that may be replicated in schools across New York City. In other words, events and conferences may be viewed as a method to maximize Leadership through the process of subject-matter-expert collaboration.

Overhead and Supplies

This category constitutes the second highest cost category after leadership. Funding for overhead and supplies is, in essence, a support category for Leadership. The books and software materials allow the instructors to teach through visual and interactive means, which perhaps is the most conducive way to teach a broad spectrum of sustainability issues.

Budget: A line item budget of the above expenses is provided below.

Budget for Sustainability Curriculum - MS 88			
	Expense	**Positions**	**Estimated Annual Costs**
LEADERSHIP			
New Full Time Staff**	Sustainability Manager	1	$80,500
	Academic Specialist	1	$57,500
	Partnership Coordinator	1	$57,500
	Research Assistant	1	$51,750
Existing Staff	Stipend for initial work by existing staff	---	$5,000
Graduate Team of Consultants*	Education and/or Environmental Science & Policy Graduate Students	6	$13,455
Total Leadership Costs			*$265,705*
EVENTS & CONFERENCES			
	Initial Conference of Professionals	20	$7,000
	Out-of-Collaboration Sessions	---	$20,000
	Final Retreat of Professionals	20	$7,000
	Class Field Trips & Excursions	---	$2,100
Total Events & Conferences Costs			*$36,100*
OVERHEAD & SUPPLIES			
	Supplies	---	$3,000
	Library Books	---	$2,682
	Textbooks	---	$34,271
	Educational Software	---	$36,412
Total Overhead & Supplies Costs			*$76,365*
Total Annual Costs Related to the Sustainability Program			**$378,170**

Figure 7: This is the line item budget for the implementation of MS 88's sustainability curriculum.

** The Estimated Annual Cost for the four full time hires includes base salary plus fringe benefits equal to 15% of base.
*The Estimated Annual Cost for the team of (6) graduate students was calculated based on the number of estimated hours that our team spent on this project for MS 88 multiplied by an hourly rate of $33.52. The hourly rate was calculated based on information gathered on the DOE Galaxy website with regards to MS 88's *Educational Consultant* pay for Fiscal year 2013 ($61,000).

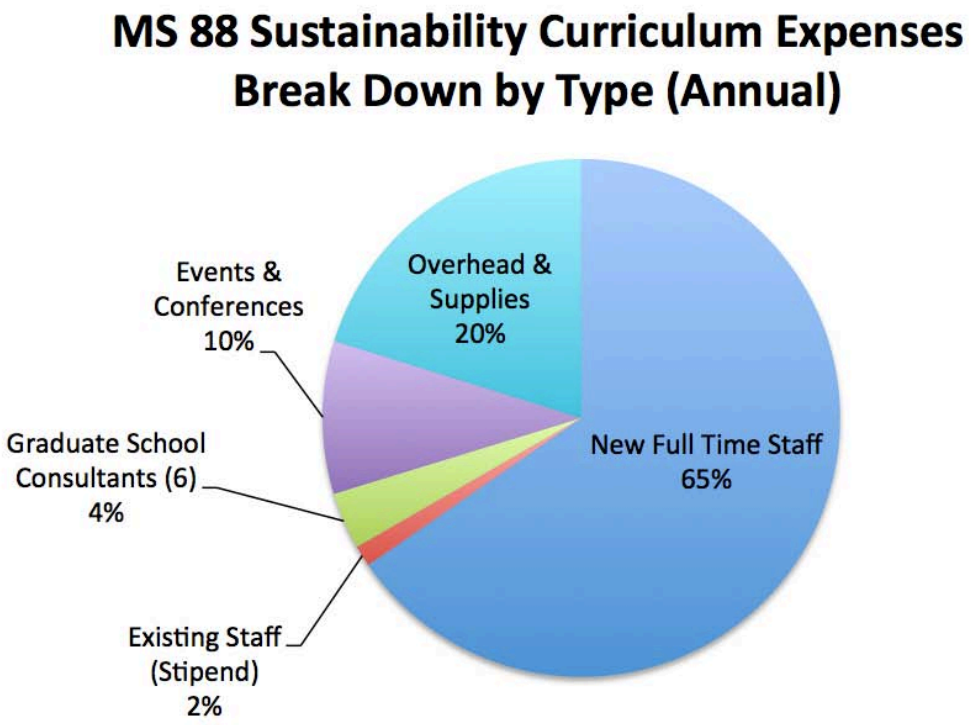
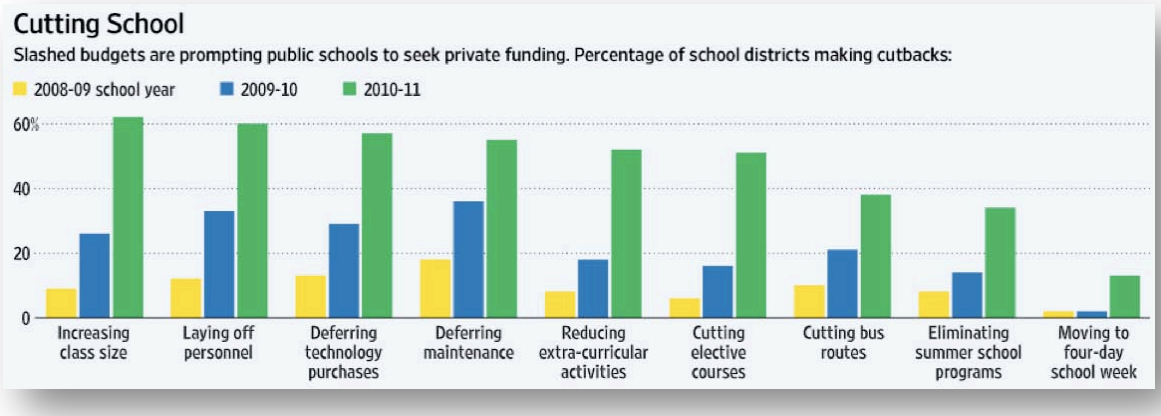


Figure 8: This pie chart illustrates MS 88's expenses to implement the sustainability curriculum.

(Alternative) Funding Sources

The primary source of funding for MS 88 is from municipal/government sources. However, there are possibilities to generate funding from alternative sources. This is increasingly important, as public schools across the United States have experienced funding gaps. The two charts below provide a general view of the declining state of monetary resources available for schools to purchase necessary supplies, pay teachers, and keep operations running smoothly. Specifically, New York State has suffered from cuts to early education. For schools such as MS 88, which want to implement non-traditional, pioneering curricula that may be seen erroneously as superfluous, it is perhaps even more important for it to acquire alternative funding sources in order to make the program a *sustainable program for the long-term.*

Chart: Budget Cuts to American Public Schools



Source: American Association of School Administrators via the Wall Street Journal

Figure 9: This chart depicts the effect of budget cuts to public schools across America.

Chart: New York State Revenue/Budget Shortcomings Impacting Public Education Spending

State	FY12 Projected shortfall (in $ millions)	Shortfall as Percent of FY12 budget	Personal income tax (% change January-March 2010 to 2011)	Corporate income tax (% change January-March 2010 to 2011)	Sales tax (% change January-March 2010 to 2011)	Cuts for Public Health Programs	Cuts for K-12 and Early Education	Cuts for Higher Education	Cuts in State Work Force
New York	$10,000	18.7%	3.2%	15.3%	12.7%	X	X	X	X

Source: Center on Budget and Policy Priorities: The Nelson A. Rockefeller Institute of Government at the State University of New York

Figure 10: This chart outlines data on New York State Revenue and Budget pitfalls. It implies that New York State is under pressure with respect to the general health of its economy, budget, and revenue sources, all of which impact the state's ability to fund public education.

Private Sector Funding

We strongly advocate that MS 88 seek alternative funding sources. Being located in New York City, MS 88 has certain advantages that other public schools may not have. Namely, New York City is one of the financial capitals of

the world. Thus, the biggest banking and financial institutions are located in Manhattan,[2] and we encourage MS 88 to leverage this to their advantage.

There are various companies that are known to be more "socially-driven" than others. For example, American Express has a long history of supporting local businesses, the arts (Tribeca Film Festival), and various environmental initiatives. In addition, most of the large banking institutions have Environmental Affairs Offices, which work to make the internal operations of the organization less carbon intensive. Virtually all of the banks have Corporate Social Responsibility (CSR) offices. These offices are possible points of contact for MS 88 in developing working relationships.

A list of the major financial institutions with global and/or regional headquarters in New York City—and that are active in corporate social responsibility (marketing)—is located below[3]:

- American Express
- J.P. Morgan Chase
- Bank of America
- Citigroup
- HSBC
- Goldman Sachs

The funding that MS 88 may want to seek may come in various forms, including: monetary, donations of supplies, donations of books and software, and sponsorship of conferences among others.

Non-Profit Resources

In addition to the private sector, MS 88 may also want to look to non-profits for additional resources that may help the long-term viability of the curriculum. Although non-profits may not have financial resources on par with companies in the private sector, they are a rich source of contacts and industry knowledge that may be able to connect MS 88 with funding partners. In addition, and perhaps more critically, non-profits may be a source of knowledge in specific aspects of sustainability that MS 88 may want to tap for its curriculum. For example, the Natural Resources Defense Council (NRDC) and Environmental Defense Fund (EDF) are two of the largest environmentally minded non-profits

[2] Some of the larger banks, such as JP Morgan, have key office in Brooklyn

[3] There are additional banking/financial institutions located in New York City, including BlackRock, AllianceBernstein, Bank of New York Mellon, etc. However, these companies may be less active in their marketing of CSR causes and thus, may be less inclined to fund MS 88 activities.

with offices in New York. There may be opportunities of forming partnerships between MS 88 and NRDC/EDF to jointly develop curriculum structure or specific lesson plans with the added advantage that NRDC/EDF can pull in a "corporate backer" with regards to funding. In other words, NRDC and EDF, among other organizations, are essentially "brain trusts" of immense knowledge on current sustainability issues with connections to the private sector, from which MS 88 can benefit. Other non-profits to look into are the Arbor Day Foundation and the Nature Conservancy.

Public Relations and Communications – The Importance of Intangible Assets

As overviewed briefly in the Management Plan, the MS 88 sustainability curriculum would benefit from a public relations and communications component. The benefits from public outreach initiatives are three-fold.

Firstly, awareness of the program would likely increase the prospects of alternative funding from three targeted 'spheres': public, private and non-profit. Specifically, with regards to private businesses, it is likely that MS 88 would be able to acquire larger amounts of funding from this sphere as awareness of its sustainability program increases. We view the private sector as the strongest source of funding outside of expected municipal/government funding. There are many reasons as to why private businesses would provide funding for MS 88. For one, companies can increase their reputational "goodwill" by supporting local community organizations. In a similar vain, companies, some more than others, strive to be seen as supporters of "healthy communities" and advocates of sustainability. Reputation is classified as an intangible asset on a publicly traded company's balance sheet. The mechanism for deriving a monetary value for reputation/goodwill is complex and, to a certain extent, theoretical. However, large companies can often translate their support for community initiatives and environmental conservation activities into a higher value for intangible assets. We recommend that MS 88 take advantage of the desire for large organizations to support communities, regardless of the underlying reason, to acquire additional funding. In general, PR/communications and privately sourced funds may be self-reinforcing. As MS 88 initiates a PR/communications campaign, it may increase the probability for the school to obtain alternative funding sources, which can be funneled back into communications initiatives, among other critical expenses. This will help MS 88 achieve one of its goals to have its sustainability curriculum recognized as one that can be *sustained* in the long run as well.

Secondly, in addition to acquiring financing more easily as awareness of the sustainability curriculum increases, MS 88 may find it easier to also attract educational partners. For example, the Earth Institute at Columbia University is a world-renowned research institution. It stands at the edge of leading thought on

environmental science and policy issues, ideas that can be incorporated into the school's curriculum on an ongoing basis. The science behind environmental challenges and knowledge, such as climate change and biodiversity, is constantly changing and at an ever-rapid pace. Thus, it may be wise for MS 88 to form formal/informal partnerships with leading research organizations. A possible avenue for this connection between MS 88 and the Earth Institute, for example, is to "employ" a team of graduate students who can act as yearlong liaisons between the school and the Earth Institute. Because the amount of time and effort can be quite considerable, a stipend for this team of graduate students may be advantageous for both MS 88 and the graduate students. It may be worth considering from which field of studies to "source" graduate students. For example, a mix of educationally oriented students and environmentally oriented students may be superior than sourcing the entire team from either one or the other.

Thirdly, MS 88 has an opportunity to situate itself as a 'pioneer' in the nexus between sustainability and education. The reason this is important is because MS 88's curriculum can serve as a model program for implementing similar sustainability initiatives at other schools in the New York City metropolitan area and beyond. Thus, having a comprehensive communications component to raise awareness about the sustainability program may help provide other schools looking to implement a sustainability program with a guide in the form of MS 88's milestones and accomplishments.

The fundamental goal of this financial plan is to help MS 88 think about and address the cash flow needs that are fundamental to operating any sustainability curriculum. The more financially self-sustaining the program is, the more it will be buffered against municipal funding gaps, which may prematurely end what could potentially be an educationally pioneering and thematically cross-cutting program. Financial health is perhaps the most important operational aspect of the program because, without the financing, the curriculum simply cannot exist. Overall, MS 88 needs to be both resourceful and creative in acquiring its funding needs. Diversification of capital sources should be an overriding theme of the financial plan. Specifically, the more diverse the school's sources of funding from private, public and non-profit sectors, the more adaptable it will be able to remain with regards to municipal funding gaps in a macro-economic environment defined by fiscal constraint.

CONCLUSION

Our team completed our three strategic goals of designing an interdisciplinary sustainability curriculum, developing management and financial plans to implement this curriculum, as well as devising teacher evaluations to track the progress of the program. The successful consideration and implementation of this strategic plan will help teachers further shape sustainability literate students at MS 88 and will allow school administration and faculty to make this genre and method of education more sustainable. If this pilot program proves successful, we hope that MS 88, as a pioneering school, will facilitate its adoption to several other schools throughout New York City.

Above all, this strategic plan is meant to be a vehicle for progress in sustainability efforts worldwide. The purpose of this project is to educate students about the way in which the environment is the foundation for all social, economic, and cultural systems throughout the world and to equip them with the knowledge and skills to mitigate the environmental damage currently in progress. Only through an interdisciplinary sustainability education will students be prepared to face new opportunities towards a healthier and more sustainable planet.

APPENDIX I: WORKPLAN

Advancing Education for Sustainable Development

Week	Group	Activity	Internal deadline		
1	Managers	Organization and Preparation for Workshop Assignment	1/30/2013	Jessica	Cozette
	Research:	Sustainable Education Standards	1/30/2013	Patrick	Frank
		National Common Core Standards	1/30/2013	Parisa	Sarah
		Next Generation Science Standards	1/30/2013	Erin	Mashael
		Park Slope Complex	1/30/2013	Pete	
Week	**Group**	**Activity**	**Internal deadline**		
2	Managers	Project Control Plan and Workplan Design	2/4/13	Jessica	Cozette
	Editors	Set up Literature Review	2/4/13	Parisa	Patrick
	Fieldworkers	Create a fieldwork team	2/4/13	Kim-Chi	
	Finance	Research school's budget and finances	2/4/13	Pete	
	Research:	Other Middle School Sustainability Curriculums	2/4/13	Anastazia	
		Department of Education Website	2/4/13	Mashael	Patrick
		Green Ribbon Schools	2/4/13	Erin	
		Middle School Demographics	2/4/13	Parisa	
		US Partnership for Sustainability	2/4/13	Frank	
Week	**Group**	**Activity**	**Internal deadline**		
3	Managers	Begin curriculum design	2/11/2013	Jessica	Cozette
	Research:	Continued literature survey	2/11/13	All as necessary	
	Fieldworkers	Begin contacting people for interviews	2/11/13	Kim-Chi	Mashael

Week	Group	Activity	Internal deadline		
4	Managers	Allocate portions of curriculum design	2/18/2013	Jessica	Cozette
	Research	Completed interschool survey and curriculum research	2/18/13	All as necessary	
	Fieldworkers	Continued as needed	2/18/13	Kim-Chi	Mashael
	Design	Continue curriculum design	2/18/13	All as necessary	
	Briefers	Group discussion on midterm briefing	2/18/13	Erin	Sarah
		Rough draft to managers	2/22/13		

Week	Group	Activity	Internal deadline		
5	Managers			Jessica	Cozette
	Briefers	Semi-final presentation	2/25/13	Erin	Sarah
		Presentation to group	2/27/13		
	Research	Continued as needed	2/25/13	All as necessary	
	Fieldworkers	Continued as needed	2/25/13	Kim-Chi	Mashael
	Design	Broad stroke curriculum due + topic proposals for a unit	2/25/13	Jessica	Cozette

Week	Group	Activity	Internal deadline		
6	Managers			Jessica	Cozette
	Briefers	Midterm Briefing	3/6/13	Erin	Sarah
	Curriculum design	Begin work on unit	3/4/13	Jessica	Cozette

Week	Group	Activity	Internal deadline		
7	Managers			Jessica	Cozette
	Design	Curriculum design	3/11/13	Jessica	Cozette
	Fieldworkers	Continue as needed	3/11/13	Kim-Chi	Mashael
	Research	Continue as needed	3/11/13	All as necessary	

Week	Group	Activity	Internal deadline		
8	Managers			Jessica	Cozette
	Writers	Begin work on writing report	3/18/13	All	
	Design	Continue unit design	3/18/13	Jessica	Cozette
	Finance	Begin to compile financial analysis	3/18/13	Pete	

Week	Group	Activity	Internal deadline		
9	Managers			Jessica	Cozette
	Editors	Outline of paper due	3/27/13	Parisa	Patrick
	Writing	First set of writing sections assigned	3/27/13	All	
	Curriculum	Continue curriculum integration	3/27/13	All	

Week	Group	Activity	Internal deadline		
10	Managers	Curriculum design format due	4/3/2013	Jessica	Cozette
	Management Plan	Management Plan outline due	4/1/2013	Sarah	
	Editors	Update on writing progress	4/1/13	Parisa	Patrick
	Writers	Literature Review complete	4/3/13	All	
	Financial	Outline of financial account due	4/1/13	Pete	
	Curriculum	Integrated curriculum due	4/1/13	All	
	Web resource	Plan for web resource due	4/1/13	Mashael	
	Research	More in depth research	4/3/13	All	

Week	Group	Activity	Internal deadline		
11	Managers			Jessica	Cozette
	Writers	All writing assignments due to editors	4/8/13	All	
		Visuals due	4/12/13	Erin	
	Curriculum	Draft of "unit" design due	4/8/13	All	
	Briefers	Group discussion on final briefing	4/8/13	Anastazia	Frank
		Rough draft of presentation to managers	4/12/13		
	Web Resource	Final design of web resource due	4/8/13	Mashael	
	Financial	Financial account due	4/8/13	Pete	
	Management Plan	Management Plan Due	4/8/13	Sarah	

	Editors	First draft of paper	4/10/13	Parisa	Patrick
		Visuals due	4/12/13	Erin	
Week					
12	Managers			Jessica	Cozette
	Briefers	Presentation walk through	4/15/13	Anastazia	Frank
		Present to group	4/17/13		
	Editors	Second draft of report	4/17/13	Parisa	Patrick
	Curriculum	Unit design complete	4/15/13	All	
Week	**Group**	**Activity**	**Internal deadline**		
13	Managers			Jessica	Cozette
	Briefers	Dry-Run	4/24/13	Anastazia	Frank
	Editors	Third draft of report	4/24/2013	Parisa	Patrick
		Final report due	4/26/13		
	Other	Any last minute work	4/24/13	All	
Week	**Group**	**Activity**	**Internal deadline**		
14	Managers			Jessica	Cozette
	Briefers	Final Briefing	5/1/13	Anastazia	Frank
		Briefing to client	TBD		

APPENDIX II: TIME MANAGEMENT SHEET

Task								
Team Member	**Total**	**Full Group Meetings**	**Research**	**Matrix Compilation**	**Unit Creation (Individual)**	**Unit Creation (Team)**	**Unit Project (Individual)**	**Unit Project (Team)**
Nancy Degnan		Faculty Advisor						
Cozette Csoke		Manager						
Jessica Donohue		Manager						
Erin Entler	48	20	8	4	6	6	2	2
Mashael Fakhro	47	20	8	4	8	6	1	0
Sarah Finn	42	20	4	6	6	4	1	1
Peter Leung	43	20	5	4	5	6	2	1
Parisa Mahdad	56	20	5	10	10	8	2	1
Anastazia Neely	47	20	4	6	4	6	3	4
Kim-Chi Nguyen	58	20	8	6	10	8	4	2
Patrick Niemeyer	50	20	4	6	10	4	2	4
Frank Reig	46	20	6	4	4	6	4	2
Net Total	**437**	180	52	50	63	54	21	17

APPENDIX III: CURRICULUM MATRIX GRADES 6-8

6th Grade Integrated Curriculum Map

	September	October	November	December	January	February	March	April	May	June
Literacy (*Reading*)	**Unit Theme**: Crafting an independent reading life based on book bands **Essential Question:** **Standards:** ELA CC: RL.6.1 - RL.6.6, RI.6.1 - RI.6.5 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 3.1 Personal Action	**Unit Theme**: Shared Reading Experience - focus on tracking the relationship between setting and story across text **Essential Question**: **Standards**: ELA CC: RL.6.1 - RL.6.9, RI 6.1 - RI.6.10, SL.6.1 - SL.6.4 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.4 Social and Cultural Systems	**Unit Theme**: Teacher choice **Essential Question**: **Standards**: **Sustainability Standards/Themes:**	**Unit Theme**: Character study **Essential Question**: **Standards**: ELA CC: RL.6.1 - RL.6.7, RI.6.1 - RI.6.10 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.4 Social and Cultural Systems	**Unit Theme**: Literary archetypes and antecedents **Essential Question**: **Standards:** ELA CC: RL.6.1 - RL.6.6, RI.6.1 - RI.6.9 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems.	**Unit Theme**: Tracking the eight features of civilization **Essential Question**: **Standards:** ELA CC: RL.6.1 - RL.6.6, RI.6.1 - RI.6.6, SL.6.1 - SL.6.6 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems.	**Unit Theme**: Teacher choice **Essential Question**: **Standards**: **Sustainability Standards/Themes:**	**Unit Theme:** Test prep, fantasy books and current events **Essential Question**: **Standards**: ELA CC: RL.6.1 - RL.6.10, RI.6.1 - RI.6.10, SL.6.1 - SL.6.6 **Sustainability Standards/Themes**: 2.1 Interconnectedness. 3.2 Collective Action		
Literacy (*Writing*)	**Unit Theme**: Raising the level of narrative writing **Essential Question**: **Standards**: ELA CC: W.6.1 - W.6.10 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 3.1 Personal Action	**Unit Theme**: Narrative writing **Essential Question**: **Standards**: ELA Common Core: W.6.1-W.6.10 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.4 Social and Cultural Systems	**Unit Theme**: Teacher choice **Essential Question**: **Standards:** **Sustainability Standards/Themes:**	**Unit Theme**: Personal essay on empathy and current global understanding **Essential Question**: **Standards:** ELA CC: W.6.1 - W.6.10 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.4 Social and Cultural Systems	**Unit Theme**: Fairytales, folklore and myths **Essential Question**: **Standards:** ELA CC: W.6.1-W6.10, L.6.1, L.6.2, L.6.3, L.6.6 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems.	**Unit Theme**: Persuasive essay with a focus on one feature of civilization **Essential Question**: **Standards:** ELA CC: W.6.1-W.6.10 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems.	**Unit Theme**: Teacher choice **Essential Question**: **Standards**: **Sustainability Standards/Themes:**	**Unit Theme:** Test prep, fantasy short stories and persuasive writing to make a real difference **Essential Question**: **Standards:** ELA CC: Could be all of the Writing Standards **Sustainability Standards/Themes**: 2.1 Interconnectedness. 3.2 Collective Action		
Math	**Unit Theme**: Multiplying and dividing **Essential Question**: **Standards**: Math CC: EE Goal 1, Standard 2b; SP Goal 2, Standard 5c; Math DOE CC: 6.NS.1 - 6.NS.4, 6.G.2 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 3.1 Personal Action	**Unit Theme**: Ratios **Essential Question**: **Standards**: Math CC: NS Goal 1, Standard 1; NS Goal 2, Standard 4; RP Goal 1, Standard 3a ; Math DOE CC: 6.RP.1 - 6.RP.3 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.4 Social and Cultural Systems	**Unit Theme**: Introduction to rational numbers **Essential Question**: **Standards**: Math CC: NS Goal 1, Standard 1; NS Goal 2, Standard 3; RP Goal 1, Standards1-3; Math DOE CC: 6.NS.5 - 6.NS.8 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.4 Social and Cultural Systems	**Unit Theme**: Expressions and equations **Essential Question**: **Standards**: Math CC: NS Goal 2, Standard 3 Math DOE CC: 6.EE.1 - 6.EE.9 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.4 Social and Cultural Systems	**Unit Theme**: Expressions and equations **Essential Question:** **Standards**: Math CC: SP Goal 1, Standards 1-3; SP Goal 2, Standard 4-5; G Goal 1, Standards 1-4; Math DOE CC: 6.EE.1 - 6.EE.9 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems.		**Unit Theme**: Concepts in geometry **Essential Question**: **Standards**: Math CC: NS Goal 2, Standard 2; NS Goal 3, Standard 8; Standards EE Goals 1-3, Standards 1-9 Math DOE CC: 6.G.1 - 6.G.4 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 3.2 Collective Action	**Unit Theme**: State testing practice **Essential Question**: **Standards**: **Sustainability Standards/Themes:**	**Unit Theme**: Math Project **Essential Question**: **Standards**: **Sustainability Standards/Themes**:	**Unit Theme**: Statistics **Essential Question:** **Standards**: Math CC: SP Goal 1, Standards 1-3; SP Goal 2, Standard 4-5 ; Math DOE CC: 6.SP.1 - 6.SP.5 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 3.2 Collective Action
Science	**Unit Theme:** Rules & Procedures; The Scientific Method **Essential Question**: **Standards**: CCSS.ELA-Literacy.RST.6-8.3 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 3.1 Personal Action	**Unit Theme**: Simple and Complex Machines **Essential Question**: How does energy play a role in our lives? How do machines impact our lives? **Standards**: CCSS.ELA-Literacy.RST.6-8: 1-9; NexGen PS3-1,2 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.4 Social and Cultural Systems		**Unit Theme**: Weather **Essential Question**: How do matter and energy interact to produce weather patterns? **Standards**: CCSS.ELA-Literacy.RST.6-8: 1-9; NexGen MS.ESS2-4-6, MS.ESS3-5 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.4 Social and Cultural Systems. 2.2 Ecological Systems. 2.3 Economic Systems.		**Unit Theme**: Diversity of Life **Essential Question**: How does the transfer of matter and energy through biological communitites support diversity of living things? **Standards**: CCSS.ELA-Literacy.RST.6-8: 1-9; NexGen MS.LS1-4,56, MS.LS2-3,4,5, MS.LS4-2,3,4,5 **Sustainability Standards/Themes**: 2.2 Ecological Systems. 2.3 Economic Systems. 2.1 Interconnectedness. 3.2 Collective Action		**Unit Theme**: Interdependence **Essential Question**: How is interdependence essential in maintaining life on Earth? **Standards**: NextGen: MS-LS1-5, MS-LS2-1,2,3,4, MS-ESS-2, 3, 4, 5 **Sustainability Standards/Themes**: 2.1 Interconnectedness. 3.2 Collective Action		**Unit Theme**: Review **Essential Question**: **Standards**: **Sustainability Standards/Themes**:
Social Studies	**Unit Theme:** Geography & Early Peoples of the Eastern Hemisphere **Essential Question:** How did geography influence the development of the Eastern Hemisphere? **Standards**: CCSS.ELA-Literacy.RH.6-8.7 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 3.1 Personal Action. 2.4 Social and Cultural Systems		**Unit Theme**: Middle East **Essential Question:**How do geography, economics, people, and key events connect to shape a continent? **Standards**: CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,8,9 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.4 Social and Cultural Systems		**Unit Theme**: Africa **Essential Question**: How do geography, economics, people, and key events connect to shape a continent? **Standards**: CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,8,9 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems.		**Unit Theme**: Asia **Essential Question**: How do geography, economics, people, and key events connect to shape a continent? **Standards**: CC Standard 1,2,3,4,8,9 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 3.2 Collective Action		**Unit Theme**: Europe **Essential Question**: How do geography, economics, people, and key events connect to shape a region? **Standards**: CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,8,9 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 3.2 Collective Action	

7th Grade Integrated Curriculum Map

	September	October	November	December	January	February	March	April	May	June
Literacy (*Reading*)	**Unit Theme:** Launch Reading Workshop **Essential Question:** **Standards:** ELA CC: RL.7.1 - RL.7.6 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.1 Interconnectedness	**Unit Theme:** Shared Reading Experience **Essential Question:**Crafting an Independent Reading Life Based on Book Bands **Standards:** ELA CC: RL.7.1 - RL.7.6, RI.7.1 - RI.7.9, SL.7.1 - SL.7.4 **Sustainability Standards/Themes:** 3.2 Collective Action. 2.2 Ecological Systems	**Unit Theme:** Science Fiction/Dystopias **Essential Question:** Character and Inferences **Standards:** ELA CC: RL.7.1 - RL.7.6, RI.7.1 - RI.7.9 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems		**Unit Theme:** Thematic Text Sets **Essential Question**: Pulling one theme and tracking it across multiple texts **Standards**: ELA CC: RL.7.1 - RL.7.7, RI.7.1 - RI.7.9 **Sustainability Standards/Themes:** 2.3 Economic Systems. 3.1 Personal Action		**Unit Theme:** Test Prep **Essential Question:**Using reading skills across content areas, especially social science **Standards:** ELA CC: RL.7.4 - RL.7.7 **Sustainability Standards/Themes:**	**Unit Theme:** Teacher choice **Essential Question:** **Standards:** **Sustainability Standards/Themes:**	**Unit Theme:** Historical Fiction **Essential Question:**Using reading skills across content areas; genre based reading; Reading for real **Standards:** Poetry Interpretation: ELA CC: RL.7.4 - RL.7.6, RI.7.4 - RI.7.6; Content Area Reading: ELA CC: RL.7.1 - RL.7.10, RI.7.1 - RI.7.10 **Sustainability Standards/Themes:** 3.1 Personal Action. 2.4 Social and Cultural Systems	**Unit Theme:** Teacher choice **Essential Question:** **Standards:** **Sustainability Standards/Themes:**
Literacy (*Writing*)	**Unit Theme:** Quick Publish Assessment (Narrative) **Essential Question:**Raising the level of narrative writing **Standards:** ELA CC: W.7.3, W.7.4, W.7.5, W.7.6, W.7.10, L.7.1, L.7.2, L.7.3, L.7.6 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.1 Interconnectedness	**Unit Theme:** Personal Narrative **Essential Question:** Identify the difference between storytelling and summarizing **Standards:** ELA CC: W.7.3, W.7.4, W.7.5, W.7.6, W.7.10, L.7.1, L.7.2, L.7.3, L.7.6 **Sustainability Standards/Themes:** 3.2 Collective Action. 2.2 Ecological Systems	**Unit Theme:** Literary Essay **Essential Question:** Write expository essays that advance an idea about a piece of literature **Standards:** ELA CC: W.7.1, W.7.2, W.7.4, W.7.5, W.7.6, W.7.7, W.7.8, W.7.9, W.7.10, L.7.1, L.7.2, L.7.3, L.7.6 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems		**Unit Theme:** Personal Essay and Social Science Empathy Journals **Essential Question:** Writing to take a stance; write a general thesis based on a personal idea **Standards:** ELA CC: W.7.1, W.7.2, W.7.4, W.7.5, W.7.6, W.7.7, W.7.8, W.7.9, W.7.10, L.7.1, L.7.2, L.7.3, L.7.6 **Sustainability Standards/Themes:** 2.3 Economic Systems. 3.1 Personal Action		**Unit Theme:** Test Prep **Essential Question:** Encompasses all themes/skills **Standards:** ELA CC: W.7.1-W.7.10, L.7.1, L.7.2, L.7.3, L.7.6 **Sustainability Standards/Themes:**	**Unit Theme:** Teacher choice **Essential Question:** **Standards:** **Sustainability Standards/Themes:**	**Unit Theme**: Historical Fiction or Historical Fiction Graphic Novel **Essential Question**: Develop, organize, and style writing clearly **Standards:** ELA CC: W.7.1-W.7.10 and L.7.1, L.7.2, L.7.3, L.7.6 **Sustainability Standards/Themes:** 3.1 Personal Action. 2.4 Social and Cultural Systems	**Unit Theme:** Teacher choice **Essential Question:** **Standards:** **Sustainability Standards/Themes:**
Math	**Unit Theme:** Algebra **Essential Question:** Expression **Standards:** Math CC: EE Goals 1&2, Standards 1-4; NS Goal 2, Standard 2d **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.1 Interconnectedness	**Unit Theme:** Integers & Exponents **Essential Question:** Reasoning, Pattern, Form **Standards:** Math CC: NS Goal 1, Standard 1d,2a,2b,2c; SP Goal 2, Standard 3, RP Goal 1, Standard 2a-d, Standard 3 **Sustainability Standards/Themes:** 3.2 Collective Action. 2.2 Ecological Systems	**Unit Theme:** Measurement & Graphing **Essential Question:** Coordinate, Representation **Standards:** Math CC: RP Goal 1, Standard 1; SP Goal 1, Standard 2; SP Goal 2, Standard 4 **Sustainability Standards/Themes:** 3.2 Collective Action. 2.2 Ecological Systems	**Unit Theme:** Geometry **Essential Question**: Spatial Visualization **Standards:** Math CC: G Goal 1, Standards 1-6 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems	**Unit Theme:** Data & Statistics **Essential Question**:Modeling and Analysis, Experiments and Simulations **Standards**: Math CC: RP Goal 1, Standard 3; SP Goal 1, Standard 1&2 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems	**Unit Theme:** Probability & Number Theory Test Prep **Essential Question:** All of the previous essential questions **Standards:** Probability & Number Theory: Math CC: NS Goal 1, Standard 1, 1b, 1c, NS Goal 2, Standard 2a, 2b, Standard 3; SP Goal 3, Standard 5-8 **Sustainability Standards/Themes:** 2.3 Economic Systems. 3.1 Personal Action	**Unit Theme:** Triangles, Polynomials, & Equations **Essential Question:** **Standards:** Triangles,Polynomials, & Equations: Math CC: G Standard 2, 6 **Sustainability Standards/Themes:** 3.1 Personal Action. 2.4 Social and Cultural Systems	**Unit Theme:** Patterns, Functions, & Graphing **Essential Question:** **Standards:** Patterns, Functions, & Graphing: N/A **Sustainability Standards/Themes:** 3.1 Personal Action. 2.4 Social and Cultural Systems		**Unit Theme:** Math Fair **Essential Question:** **Standards:** **Sustainability Standards/Themes:**
Science	**Unit Theme:** Lab Safety & Measurement **Essential Question:** **Standards:** CCSS.ELA-Literacy.RST.6-8: 3,4,5,7,8,9; NexGen MS.ETS1 Engineering Design **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.1 Interconnectedness	**Unit Theme:** Geology **Essential Question:** How do we as seientists gather and interpret evidence that Earth is continually changing? **Standards:** CCSS.ELA-Literacy.RST.6-8: 1,2,6,7,8; NexGen MS.ESS1-1, MS.ESS2-1,2,3; MS.ESS3-1 **Sustainability Standards/Themes:** 3.2 Collective Action. 2.2 Ecological Systems		**Unit Theme:** Interactions between Matter and Energy **Essential Question:** How do the properties and interactions of matter and energy explain physical and chemical change? **Standards:** CCSS.ELA-Literacy.RST.6-8: 1-9; MS-PS1-1,2,3,4,5,6; MS-PS2-1,2,3,4,5; MS-PS3-4 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems		**Unit Theme:** Dynamic Equilibrium: The Human Animal **Essential Question:** How do human body systems function to maintain homeostasis? **Standards:** CCSS.ELA-Literacy.RST.6-8: 1-9; NexGen MS.LS1-3,5,8; MS-LS3-1; MS-LS4-4,5,6 **Sustainability Standards/Themes:** 2.3 Economic Systems. 3.1 Personal Action		**Unit Theme:** Dynamic Equilibrium: Other Organisms **Essential Question:** How is homeostasis maintained in other organisms? **Standards:** CCSS.ELA-Literacy.RST.6-8: 1-9; NexGen MS.LS1-3,5,8; MS-LS3-1; MS-LS4-4,5,6 **Sustainability Standards/Themes:** 3.1 Personal Action. 2.4 Social and Cultural Systems		**Unit Theme:** Review **Essential Question:** **Standards:** **Sustainability Standards/Themes:**
Social Studies	**Unit Theme:** Early Encounters: Native Americans & Explorers **Essential Question:**What was the impact of European exploration on the Americas' land and people? **Standards:** CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,8,9 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.1 Interconnectedness	**Unit Theme:** Colonial America & the American Revolution **Essential Question:** How did the development of the colonies lead to rebellion? **Standards:** CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,6,8,9 **Sustainability Standards/Themes:** 3.2 Collective Action. 2.2 Ecological Systems		**Unit Theme:** A New Nation **Essential Question:** How did the new nation respond to independence? **Standards:** CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,8,9 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems		**Unit Theme:** A Nation Grows **Essential Question:** What were the causes and effects of national growth? **Standards:** CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,7,8,9 **Sustainability Standards/Themes:** 2.3 Economic Systems. 3.1 Personal Action		**Unit Theme:** Civil War & Reconstruction **Essential Question:** How do issues of power, wealth and morality influence war? **Standards:** CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,8,9 **Sustainability Standards/Themes:** 3.1 Personal Action. 2.4 Social and Cultural Systems		

8th Grade Integrated Curriculum Map

	September	October	November	December	January	February	March	April	May	June
Literacy (*Reading*)	**Unit Theme:** Crafting an Independent Reading Life Based on Book Bands **Essential Question:** **Standards:** ELA CC RL.8.1 - RL.8.6, RI.8.1 - RI.8.6 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 2.2 Ecological Systems	**Unit Theme:** Shared Reading Experience **Essential Question:**Crafting an Independent Reading Life Based on Book Bands **Standards:** ELA CC: RL.8.1 - RL.8.6, RI.8.1 - RI.8.9, SL.8.1 - SL.8.4 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 2.2 Ecological Systems. 2.3 Economic Systems	**Unit Theme:** Theory-Based Character Analysis **Essential Question:** Historical Character/Analysis **Standards:** ELA CC: RL.8.1 - RL8.6, RL8.9, RI.8.1 - RI.8.6 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.4 Social and Cultural Systems. 3.2 Collective Action		**Unit Theme:** Nonfiction/Content Reading **Essential Question**: **Standards**: ELA CC: RL.8.1 - 8.6, RI.8.1 - RI.8.3, RI.8.6 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.3 Economic Systems.	**Unit Theme:** Genre Study: Historical Fiction **Essential Question:** **Standards:** ELA CC: RL.8.1 - RL.8.4, RL.8.9, RI.8.1 - RI.8.6 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 1.2 Interconnectedness. 2.2 Ecological Systems. 2.4 Social and Cultural Systems	**Unit Theme:** Test Prep **Essential Question:**Using reading skills across content areas, especially social science **Standards:** ELA CC: RL.8.4 - RL.8.7 **Sustainability Standards/Themes:**	**Unit Theme:** Teacher choice **Essential Question:** **Standards:** **Sustainability Standards/Themes:**	**Unit Theme:** Reading for High School **Essential Question:**Using reading skills across content areas; genre based reading; Reading for real **Standards:** ELA CC: RL.8.1 - RL.8.10, RI.8.1 - 8.10 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems. 3.1 Personal Action.	**Unit Theme:** Teacher choice **Essential Question:** **Standards:** **Sustainability Standards/Themes:**
Literacy (*Writing*)	**Unit Theme:** Raising the level of narrative writing **Essential Question:** What makes a good story? **Standards:** ELA CC: RL.8.4 - RL.8.6 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 2.2 Ecological Systems	**Unit Theme:** I-Search Essay **Essential Question:** What is unique about your life story? **Standards:** ELA CC: W.8.3 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 2.2 Ecological Systems. 2.3 Economic Systems	**Unit Theme: Character Analysis** Literary Essay **Essential Question:** Write expository essays that advance an idea about a piece of literature **Standards:** ELA CC: W.8.1,2 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.4 Social and Cultural Systems. 3.2 Collective Action		**Unit Theme:** Genre-Based Writing: Historical Fiction or Graphic Novel **Essential Question:** Writing different styles, understanding how different genres are alike and similar **Standards:** ELA CC: W.8.4,5, RL.8.6 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.3 Economic Systems. 1.2 Interconnectedness. 2.2 Ecological Systems. 2.4 Social and Cultural Systems		**Unit Theme**: Writing for the ELA **Essential Question:** Encompasses all themes/skills **Standards:** ELA CC: **Sustainability Standards/Themes:**	**Unit Theme:** Teacher choice **Essential Question:** **Standards:** **Sustainability Standards/Themes:**	**Unit Theme**: High School Literary Essay **Essential Question**: Develop, organize, and style writing clearly **Standards:** ELA CC: W.8.7-10 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems. 3.1 Personal Action.	**Unit Theme:** Teacher choice **Essential Question:** **Standards:** **Sustainability Standards/Themes:**
Math	**Unit Theme:** Congruence and Similarity **Essential Question:** **Standards:** CC Math 8.G.1-5 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 2.2 Ecological Systems	**Unit Theme:** Functions **Essential Question:** **Standards:** CC Math 8.F.1,2, 8.SP.1 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 2.2 Ecological Systems. 2.3 Economic Systems	**Unit Theme:** Linear Relationships **Essential Question:** **Standards:** CC Math 8.EE.5,6, 8.F.3-5, 7.RP.1-3 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.4 Social and Cultural Systems. 3.2 Collective Action		**Unit Theme:** Simulteaneous Linear Equations **Essential Question:** **Standards:** CC Math 8.EE.8 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.3 Economic Systems. 1.2 Interconnectedness. 2.2 Ecological Systems. 2.4 Social and Cultural Systems		**Unit Theme:** Teacher choice **Essential Question:** **Standards:** **Sustainability Standards/Themes:** **Unit Theme:** Exponents **Essential Question:** **Standards:** CC Math 8.EE.1,3,4 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 1.2 Interconnectedness. 2.2 Ecological Systems. 2.4 Social and Cultural Systems	**Unit Theme:** Radicals & Irrational Numbers **Essential Question:** **Standards:** CC Math 8.NS.1,2, 8.EE.2 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems. 3.1 Personal Action.	**Unit Theme:** Pythagorean Theorem **Essential Question:** **Standards:** CC Math 8.G.6-8 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems. 3.1 Personal Action.	**Unit Theme:** Teacher choice **Essential Question:** **Standards:** **Sustainability Standards/Themes:**
Science	**Unit Theme:** Lab Safety & Measurement **Essential Question:** General skills development (following safety procedures and using appropriate measurements) **Standards:** CCSS.ELA-Literacy.RST.6-8: 3,4,5,7,8,9; NexGen MS.ETS1 Engineering Design **Sustainability Standards/Themes:** 2.1 Interconnectedness. 2.2 Ecological Systems	**Unit Theme:** Forces and Motions on Earth **Essential Question:** How do we apply the laws of motion to explain the movement of objects on Earth? **Standards:** CCSS.ELA-Literacy.RST.6-8: 3,4,5,7,8,9; NexGen MS-PS2-1,2,3,4,5; MS-PS3-1,2,3,4,5 PS1.1-PS5.1-PS5.2n **Sustainability Standards/Themes:** 2.1 Interconnectedness. 2.2 Ecological Systems. 2.3 Economic Systems	**Unit Theme:** Earth, Sun, Moon System **Essential Question:** What roles do forces play in the patterns and stability of the Solar System? **Standards:** CCSS.ELA-Literacy.RST.6-8: 3,4,5,7,8,9; NexGen MS.ESS1-1,2,3,4 PS1.1-PS5.1-PS5.2 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.4 Social and Cultural Systems. 3.2 Collective Action		**Unit Theme:** Cells **Essential Question:** How does life on Earth continue and adapt in response to environmental change? **Standards:** CCSS.ELA-Literacy.RST.6-8: 1-9; NexGen MS.LS3-1,2,3; MS-LS4-3; LE2.1d,-4.1a,c,d **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.3 Economic Systems.	**Unit Theme:** Reproduction, Heredity and Evolution **Essential Question:** Essential Question: How does life on Earth continue and adapt in response to environmental change? **Standards:** CCSS.ELA-Literacy.RST.6-8: 1,2,3,4,5,7,8; NexGen MS-LS3-1,2; LE2.1-LE4.1-LE4.3 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 1.2 Interconnectedness. 2.2 Ecological Systems. 2.4 Social and Cultural Systems			**Unit Theme:** Humans in their Environment: Needs and Tradeoffs **Essential Question:** How does human consumption of resources impact the environment and our health? **Standards:** CCSS.ELA-Literacy.RST.6-8: 1-9; LE3.2, PS 4.1; NexGen MS-LS2-1,2,3,4,5 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems. 3.1 Personal Action.	
Social Studies	**Unit Theme:** An Industrial Society **Essential Question:**How did industrialization and immigration change the face of American life? **Standards:** CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,8,9 **Sustainability Standards/Themes:** 2.1 Interconnectedness. 2.2 Ecological Systems. 2.3 Economic Systems		**Unit Theme:** The Progressive Movement **Essential Question:** How do people effect change and reform? **Standards:** CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,8,9 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.4 Social and Cultural Systems. 3.2 Collective Action	**Unit Theme:** The United States as an Expansionist Nation **Essential Question:** How does a nation balance its own needs with the needs of the world? **Standards:** CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,8,9 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 2.3 Economic Systems.	**Unit Theme:** The United States Between Wars **Essential Question:** How does a nation respond to economic changes?; **Standards:** CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,7,8,9; **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 1.2 Interconnectedness. 2.2 Ecological Systems. 2.4 Social and Cultural Systems	**Unit Theme:** The United States Assumes Worldwide Responsibilities **Essential Question:**How do competing views of power and morality lead to global conflict? **Standards:** Assumes Worldwide Responsibilities: CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,8,9 **Sustainability Standards/Themes:** 1.1 Intergenerational Responsibility. 1.2 Interconnectedness. 2.2 Ecological Systems. 2.4 Social and Cultural Systems		**Unit Theme:** From World War II to the Present: The Changing Nature of the American People **Essential Question:** How has America reacted to the challenges of the modern world? **Standards:** CCSS.ELA-Literacy.RH.6-8: 1,2,3,4,5,8,9 **Sustainability Standards/Themes:** 2.2 Ecological Systems. 2.3 Economic Systems. 3.1 Personal Action.		

Common Core Standards
Next Generation Science Standards

APPENDIX IV: LIVE CURRICULUM MATRIX OUTLINE

Resource Description

The live curriculum matrix is an electronic resource on Microsoft Excel comprised of the original curriculum matrix with live links for each set of sub-standards included in the matrix.

Added Value

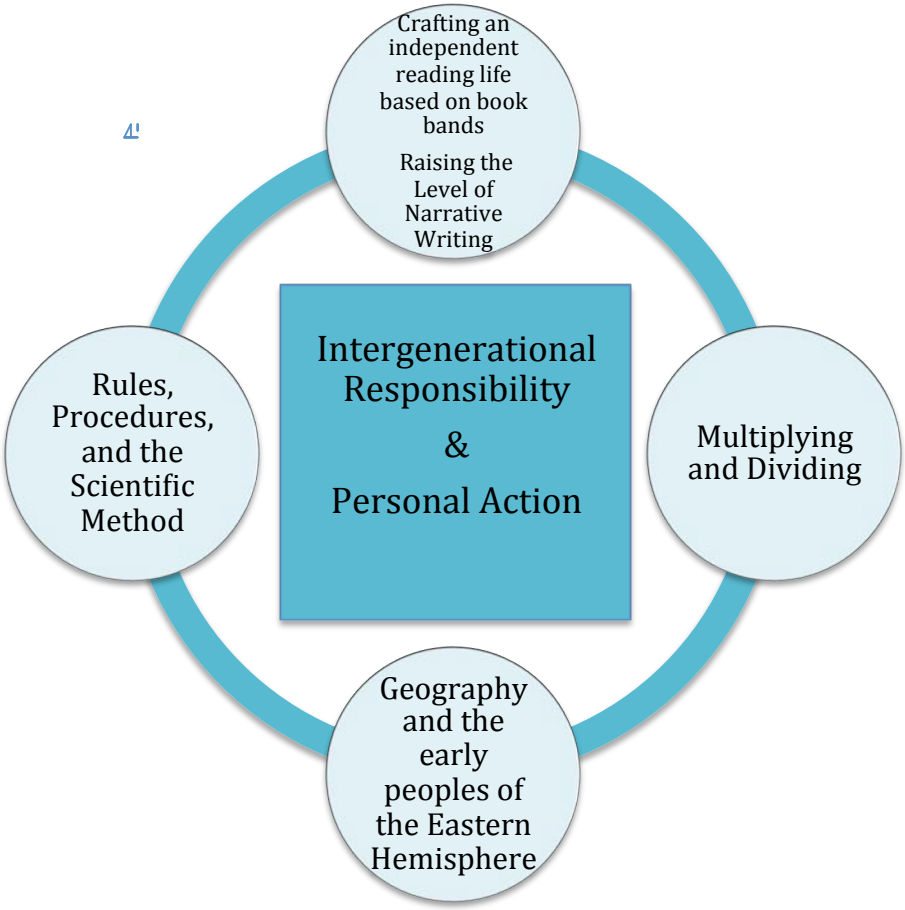
In each cell of the curriculum matrix, the relevant sub-standards are abbreviated in terms of their alphanumeric codes in order for the viewer to gain a quick overview of the year's curriculum for planning purposes. The standards listed include the Common Core Standards, Next Generation Science Standards and the US Partnership for Education for Sustainable Development Standards, and thus, as many as 30 sub-standards can be referred to within one cell. However, due to MS 88's mission to enhance its curriculum to comply with the aforementioned standards, it is of value to the teachers viewing the curriculum to be able to efficiently cross-reference the sub-standards when designing lesson plans, activities, or term projects.

The purpose of this electronic resource is to enable teachers to quickly access the standards in complete detail by clicking on the corresponding abbreviated sub-standards in the curriculum matrix. This can be done efficiently by listing the detailed standards within the same Excel file, thus enabling teachers to access this resource without the need for being connected to the Internet. Furthermore, linking directly within the Excel file as opposed to linking to the standards on web pages online minimizes the probability of encountering broken links if the web pages are restructured or moved in the near future.

This tool is especially powerful in the current phase of enhancing MS 88's curriculum to comply with new standards, including the Next Generation Science Standards and the US Partnership for Education for Sustainable Development Standards. Whereas teachers are familiar with abbreviations of Common Core sub-standards, this is less likely to be true for new standards, and thus this electronic resource can increase the efficiency of developing lesson and activity plans. Furthermore, because these standards are new, this resource would not require any technical updates for several years. Finally, because this resource is Excel based, it is accessible to all current MS 88 staff without further training and can be used as well as projected on a large screen in a variety of settings, including teacher team meetings, administrative meetings and retreats as a tool for encouraging discussion and collaboration among staff.

APPENDIX V: CURRICULUM UNITS GRADES 6-8

UNIT:	Grade 6 – Unit 1
DATES:	September



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 1 focuses on responsibility and relative action over time. As students discuss the Ice Age, and the different Eras (Mesolithic, Paleolithic, and Neolithic) and how human life was affected in Social Studies, they will learn about migration, different methods of subsistence, such as agriculture as well as hunting and gathering, and the beginning of human-made technologies and innovations – including pottery and irrigation. They will relate these topics to natural cycles of climate as well as the difference between climate and weather in Science, and how weather and the water cycle affect agriculture, such as how high temperatures kill corn crops and attract pests. Students will learn what the Keeling Curve shows and how to analyze it. In Math, students will divide the total amount of CO_2 in the world's atmosphere by the population of the world to analyze whether CO_2 per person has been increasing, decreasing, or static within a certain timeframe (i.e.: Choose 5 years in five consecutive decades). Students will choose a book that is set in the distant past for their Reading class and will then write an essay and compare the similarities and differences of this setting and the lifestyles of the book's characters to their own modern lifestyles.

SUSTAINABILITY INTEGRATION	
1.1	*Intergenerational Responsibility*
	Sub-standard and Concepts: ▪ **Responsibility to future generations:** Students analyze and list their roles and responsibilities in their family, their school, and their community—now and into the future. They demonstrate understanding of the cultural context of intergenerational responsibility (i.e. how some cultures consider and plan for seven generations into the future, etc.) **Essential Question:** o How is the scientific method used to determine past climates? What do scientific studies show about climate change? How have the activities of past generations influenced climate change and how can present and future generations prevent further global warming? **Activity/Lesson Idea:** ▪ Lesson - Students will study the Keeling Curve and scientific ways of measuring greenhouse gases (i.e. ice cores). Students will choose a book from the distant past and write an essay highlighting the similarities and differences of the setting and the characters' lifestyles to their own modern lifestyles.
3.1	*Personal Action*
	Sub-standard and Concepts: ▪ **Personal Footprint Calculation:** Students use an on-line calculator to determine their ecological footprint. **Essential Question** o What is the relationship between CO2 and world temperature averages? How do students' regular activities influence emissions, and thus, the climate? **Activity/Lesson Idea:** ▪ Lesson - Students will measure their carbon footprint in different time frames (day, week, year). In small groups, they will compare, discuss, and analyze how they can alter their habits and activities in order to reduce their carbon footprint.

DAILY PLAN/TIME MANAGEMENT					
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

INTEGRATED UNIT PROJECT
Students will interview an older family member to understand how the older generation's lifestyle differs from their own. Part 1: Interview a Family Member - Students choose an older family member, preferably a grandparent, but a mother or father works as well. Students should focus on how their family member's time period influenced their lifestyle and thus their daily habits. Questions should also include the family member's perspective on today's youth, culture, and how past generations' decisions have affected global warming today and what their advice to future generations include. Students should record their conversations as well as take notes to refer back to for their writing assignment. Part 2: Write an Essay/Story on the Family Member - Students should relay the information they've gathered from their interview into a writing assignment. Students can choose to write their assignment in the form of an essay, a story, or a memoir/biography. Part 3: Discuss in terms of Climate Change - Based on what they've learned from their family member's generation, students should engage in discussion about how things have changed and what needs to change now and in the future to combat climate change.

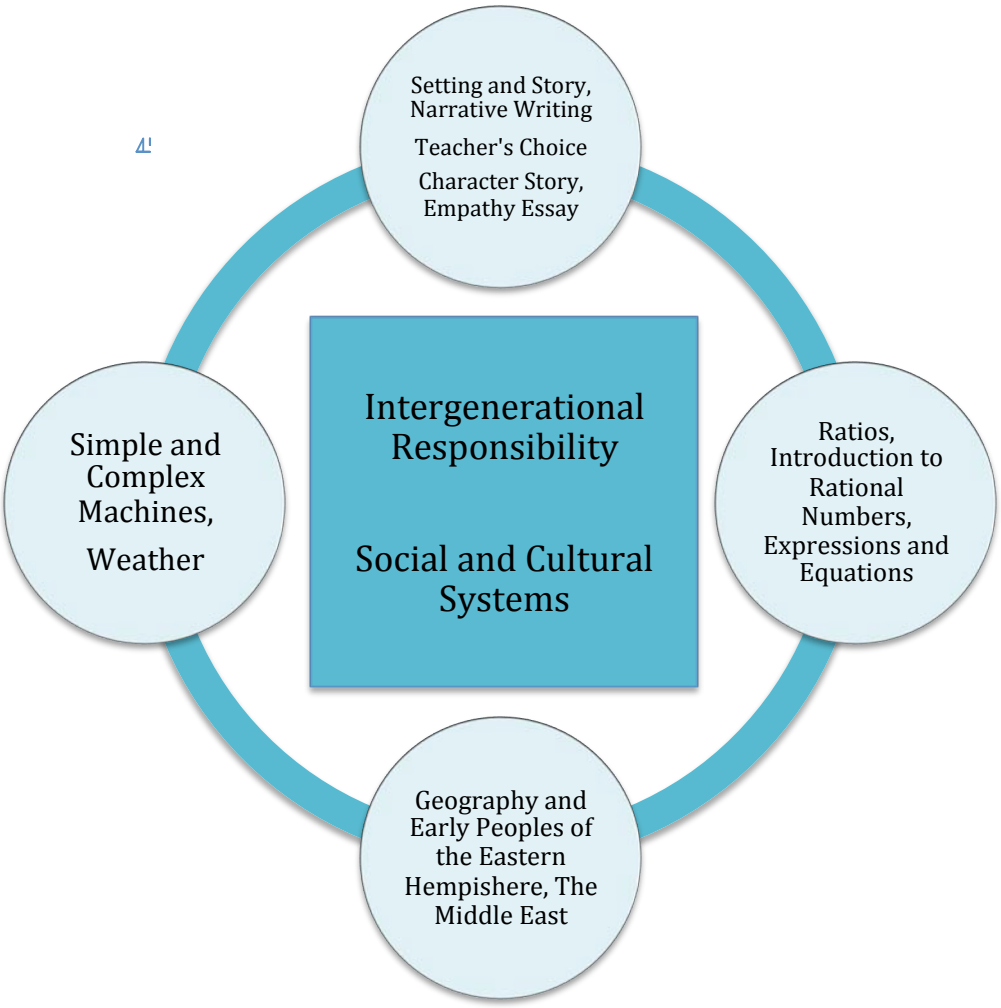
CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Language	L.6.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
	L.6.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
	L.6.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
	L.6.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and

		content, choosing flexibly from a range of strategies.
	L.6.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
	L.6.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
Writing	W.6.1	Write arguments to support claims with clear reasons and relevant evidence.
	W.6.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
	W.6.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
	W.6.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
	W.6.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 6 here.)
	W.6.6	Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.
	W.6.7	Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when

		appropriate.
	W.6.8	Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.
	W.6.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
	W.6.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
Science- *Reading Science & Technical Subjects*	RST 6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
Social Science- *Reading History*	RH 6-8.7	Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
Math- *Expressions & Equations*	EE.A.2b	Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.*
Math- *Statistics & Probability*	SP.B.5c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
Secondary Standards		
New York State (In consultation with the Common Core Standards)		
Math- *The Number System*	6.NS.1	Interpret and compute quotients of fractions, and solve word problems

		involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.
	6.NS.2	Fluently divide multi-digit numbers using the standard algorithm.
	6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
	6.NS.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
Math-Geometry	6.G.2	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 in the context of solving real-world and mathematical problems.
Next Generation		
	Next Generation standards are not applicable for this unit.	

UNIT:	Grade 6 – Unit 2
DATES:	October – December



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 2 has an energy focus. Looking at the Eastern Hemisphere, students think about and research how certain cultures used energy and natural resources to sustain their populations. Being introduced to the concepts of fossil fuels and renewable energy, and using ratios to gain awareness of the distribution of US energy across the different energy types, both renewable and non-renewable, they will use ratios to calculate how their energy savings through simple lifestyle changes can add up to cost savings. Students will write analytical essays on how their daily activities require energy and list activities that do not require energy. Shifting towards agriculture, students will discover the link between sustainability and farming practices. Learning about the geography and cultures of the Middle East, including the agricultural revolution that transformed civilization and increased population growth, students will discover the link between different energy requirements of agricultural production and

products, including the difference between less processed and more processed foods. In Math, shifting to rational numbers, students can calculate crop yields relative to agricultural production, focusing on scenarios involving different weather patterns; they can calculate savings in energy as well as the ratio of different food groups they eat from the food pyramid, and their health and environmental implications. Reading and Writing might cover John Steinbeck's *The Grapes of Wrath*, linking sustainability and farming practices, particularly in the instance of the "The Dust Bowl". By establishing the relationship between weather, farming practices and food availability, students can report on the relationship between fossil fuels, the environment, and connections to food availability.

SUSTAINABILITY INTEGRATION	
1.1	*Intergenerational Responsibility*
	Sub-standard and Concepts: ▪ **Responsibility to Future Generations –** Students analyze and list their roles and responsibilities in their family, their school, and their community -- now and into the future. They demonstrate understanding of the cultural context of intergenerational responsibility (i.e. how some cultures consider and plan for seven generations into the future, etc) **Essential Questions:** o How integral is energy use to the lives, including food availability, of humans in the present, past and future? What does that mean in terms of our responsibility to future generations? **Activity/Lesson Idea:** ▪ Students ask their family members about their energy use qualitatively in the past with an emphasis on comparing findings with other students of different cultures. They reflect on which components are essential and which are non-essential to their daily lives, and brainstorm how to reduce their energy use. ▪ As part of the literacy component, students research and write on harsh environmental conditions of a country in their heritage, and then pair up with students of different heritages to discuss their findings.
2.4	*Social and Cultural Systems*
	Sub-standard and Concepts: ▪ **Resource Distribution –** Students compare the distribution of a common resource (e.g. money, food) of different groups of people in their own community, region, nation, or world and explain how this resource distribution affects sustainability. **Essential Questions:** o How has agriculture evolved over time, and how has access to food changed over time and by geographical region? What are some of the health and environmental impacts of this distribution of food resources? **Activity/Lesson Idea:**

	▪ Students construct a food pyramid of most likely consumed foods for a group of people being studied in Social Studies, either from the Eastern Hemisphere or the Middle East, and compare this to their own personal food pyramid. In teams, they brainstorm and discuss how they can eat more balanced and environmentally conscious meals with the food available to them. ▪ In Social Studies, students research and create a report or diorama on major civilizations in the Ancient Near East, such as the Sumerians and Mesopotamians, and their interactions with energy, agriculture and the weather.

DAILY PLAN/TIME MANAGEMENT					
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

INTEGRATED UNIT PROJECT
You are responsible for planting new plants in the school's garden. <u>Part 1 – Determine which plants are eligible for planting</u> - In NYC's climate, which plants grow in which seasons? - Design a poster outlining which plants, fruits and vegetables grow in the summer, fall, winter and spring, including how different plants are adapted for different weather conditions <u>Part 2 – In teams, create a plan for taking care of one plant in the school garden</u> - Which plant is suitable for your project, and why? - Design a plan with the needs of the plant including a schedule for the dates and times of doing so <u>Part 3 – Start planting!</u> - How is the growth progress of your plant? - Document the growth process at each time of check up, and include pictures or diagrams if possible. Reflect on the experience. Do you look at the plants in the school garden and on the streets differently? How much work do you think is required for taking care of the plants in Prospect Park across the street?

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Reading - Literacy	RL.6.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

	RL.6.2	Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
	RL.6.3	Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.
	RL.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.
	RL.6.5	Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.
	RL.6.6	Explain how an author develops the point of view of the narrator or speaker in a text.
	RL.6.7	Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch.
	RL.6.9	Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.
	Rl.6.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
	Rl.6.2	Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
	Rl.6.3	Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).
	Rl.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings
	Rl.6.5	Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.
	Rl.6.6	Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.

	Rl.6.7	Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
	Rl.6.8	Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.
	Rl.6.9	Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).
	Rl.6.10	By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.
Writing - Literacy	W.6.1	Write arguments to support claims with clear reasons and relevant evidence.
	W.6.1a	Introduce claim(s) and organize the reasons and evidence clearly.
	W.6.1b	Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.
	W.6.1c	Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons.
	W.6.1d	Establish and maintain a formal style.
	W.6.1e	Provide a concluding statement or section that follows from the argument presented.
	W.6.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
	W.6.2a	Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
	W.6.2b	Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.
	W.6.2c	Use appropriate transitions to clarify the relationships among ideas and concepts.
	W.6.2d	Use precise language and domain-specific vocabulary to inform about or explain the topic.
	W.6.2e	Establish and maintain a formal style.
	W.6.2f	Provide a concluding statement or section that follows from the information or explanation

		presented.
	W.6.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
	W.6.3a	Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.
	W.6.3b	Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.
	W.6.3c	Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.
	W.6.3d	Use precise words and phrases, relevant descriptive details, and sensory language to convey experiences and events.
	W.6.3e	Provide a conclusion that follows from the narrated experiences or events.
	W.6.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
	W.6.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 6 here.)
	W.6.6	Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.
	W.6.7	Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.
	W.6.8	Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.
	W.6.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.

	W.6.9a	Apply *grade 6 Reading standards* to literature (e.g., "Compare and contrast texts in different forms or genres [e.g., stories and poems; historical novels and fantasy stories] in terms of their approaches to similar themes and topics").
	W.6.9b	Apply *grade 6 Reading standards* to literary nonfiction (e.g., "Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not").
	W.6.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
Math	6.NS.1	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?
	6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
	6.NS.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4 (9 + 2).
	6.NS.5	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

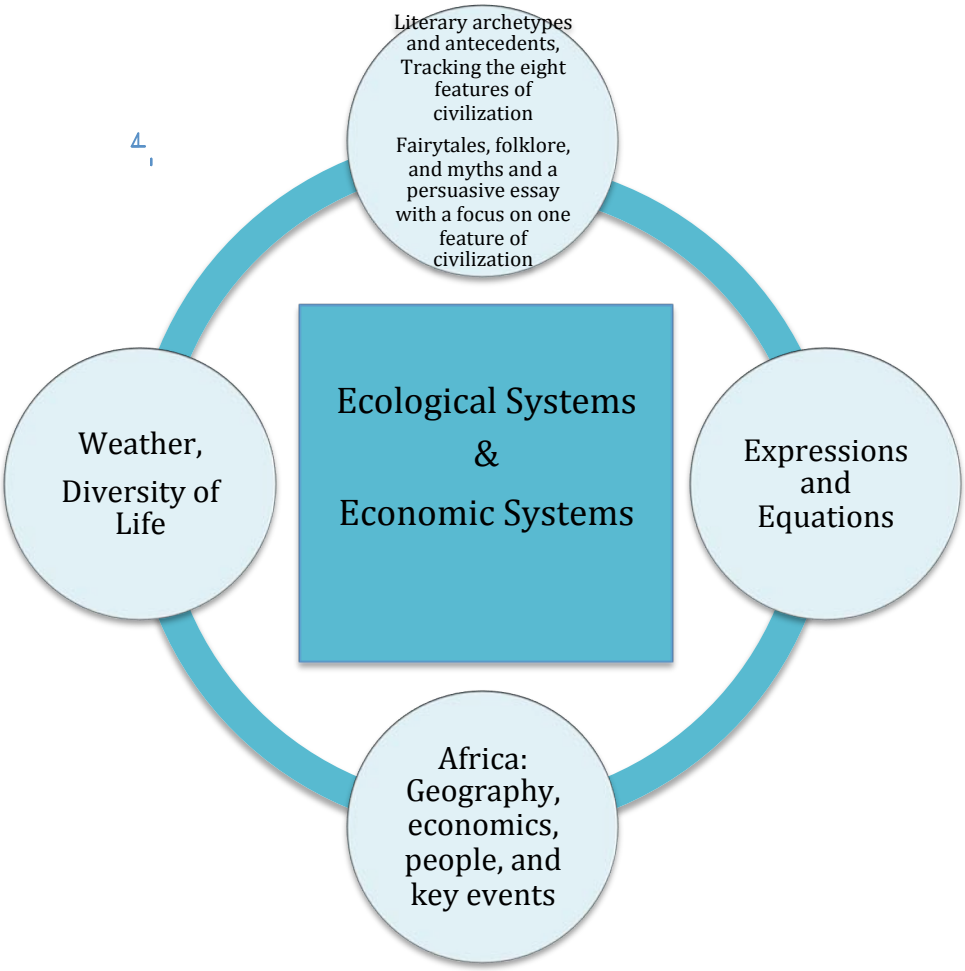
		situation.
	6.NS.6	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. a. Recognize opposite signed of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3, and that 0 is its own opposite. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the location of the points are related by reflections across one or both axes. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
	6.NS.7	Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right. b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write –3oC > –7oC to express the fact that –3oC is warmer than –7oC. c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars. d. Distinguish comparisons of absolute value from statements about order. For example, recognize that

		an account balance less than –30 dollars represents a debt greater than 30 dollars.
	6NS.8	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
	6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”
	6.RP.2	Understand the concept of a unit rate a/b associated with a ratio a:b with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar.” “We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger.” (Expectations for unit rates in this grade are limited to non-complex fractions).
	6.RP.3	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. a. Make tables of equivalent ratios relating quantities with whole- number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. b. Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. d. Use ratio reasoning to convert measurement.

	6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.
	6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation “Subtract y from 5” as 5 – y. b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms. c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole- number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas V = s3 and A = 6 s2 to find the volume and surface area of a cube with sides of length s = 1/2.
	6.EE.3	Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.
	6.EE.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.
	6.EE.5	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.

	6.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
	6.EE.7	Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q and x are all nonnegative rational numbers.
	6.EE.8	Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
	6.EE.9	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. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.
Secondary Standards		
New York State		
	Please see Common Core standards above	
Next Generation		
	MS.ESS1	Earth's Place in the Universe
	MS.ESS2	Earth's Systems- The role of water in Earth's surface processes, weather and climate, biogeology
	MS.ESS3	Earth and Human Activity

UNIT:	Grade 6 – Unit 3
DATES:	January – February



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 3 introduces the relation of environmental and economic structures – linking natural environments to man-made systems. Provided a general introduction to African culture, geography and economics - specifically regarding how human conflict can affect biodiversity in Africa, students will learn how weather influences water availability, especially through the processes of evaporation and precipitation. They will research endangered species as well as the effects of agriculture on biodiversity in Africa, analyzing equations as well as variables in graphs that pertain to water availability in Africa, and calculating decreasing animal populations in Africa. Reading may cover Anansi the Spider folklore as well as ancient Egyptian myths; students will also discuss a book of the teacher's choice that includes some, if not all, of the eight features of civilization. Students will study these stories as they relate to natural resources and write their own myth that includes environmental symbolism in the style of the myths they have read. They will write how features of civilization relate to their current country, city, or neighborhood.

SUSTAINABILITY INTEGRATION	
2.2	*Ecological Systems*
	Sub-standard and Concepts: ▪ **Biodiversity:** Students explain how the range of species and their habitats within an ecosystem interact and identify the physical environment and processes necessary for that interaction. **Essential Question:** o How do weather conditions affect ecological systems of both humans and animals in Africa? How are ecosystems affected by weather conditions in the students' own direct environment? **Activity/Lesson Idea** ▪ Lesson - Students tour their own neighborhood to identify the ecosystems present. They can either hypothesize or wait for a weather condition (rain, snow, etc) to occur to compare any changes in those ecosystem.
2.3	*Economic Systems*
	Sub-standard and Concepts: ▪ **Resource Scarcity:** Students analyze the use of a local natural resource (e.g. animal, vegetable, lumber, fish, and minerals) and consider the resources' ability or inability to regenerate at a sustainable level. **Essential Question** o What natural resources does Africa use and what resources are lacking in Africa? **Activity/Lesson Idea** ▪ Lesson - Students track the resources that they use in a day (certain foods/vegetables that they eat, wooden table, computers). After organizing all of their resources into a table, they will choose one and research its production (where it comes from, where it is sent to be manufactured) and its disposal (is it recycled or does it end up in a landfill?).

DAILY PLAN/TIME MANAGEMENT						
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10	

INTEGRATED UNIT PROJECT
Students choose their favorite product that they use most often and track its life cycle to understand where it comes from, how it is produced, and where it goes after disposal. Part 1: Choose a Product - Students choose a favorite product. It can be a food they like to eat, a drink they like to drink, their desk, a steak, their computer, a piece of jewelry, etc. Part 2: Life Cycle of that Resource - Students must research where that product originally came from, the resources that it took to produce it, and the journey that it took to get to where the student is now. - Students creatively illustrate the life cycle of that product on a poster to present to the class. Part 3: Environmental Consequences of their Resource Use - Students write a paper analyzing how the life cycle of their favorite product can affect the environment negatively. They must also write about how their behavior may or may not change after discovering the details of their product's life cycle. They should also comment on their surprise about the process and any emotions they have toward the product now.

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Language	L.6.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
	L.6.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
	L.6.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
	L.6.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.
	L.6.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
	L.6.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
Speaking & Listening	S.L.6.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

	S.L.6.2	Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
	S.L.6.3	Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.
	S.L.6.4	Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
	S.L.6.5	Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.
	S.L.6.6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 here for specific expectations.)
Writing	W.6.1	Write arguments to support claims with clear reasons and relevant evidence.
	W.6.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
	W.6.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
	W.6.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
	W.6.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 6 here.)
	W.6.6	Use technology, including the Internet, to

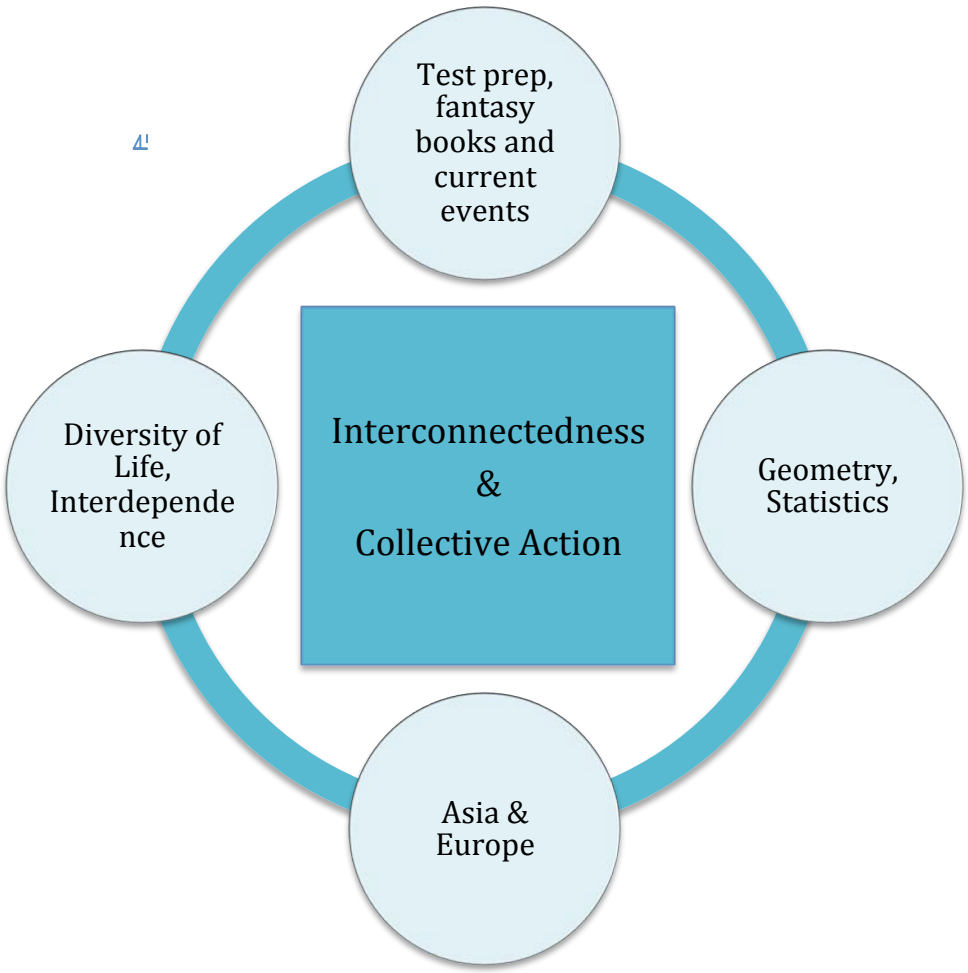
		produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.
	W.6.7	Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.
	W.6.8	Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.
	W.6.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
	W.6.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
Science- Reading Science & Technical Subjects	RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
	RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
	RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.
	RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.6-8.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

	RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Math-Statistics & Probability	SP.A.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages*.
	SP.A.2	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.
	SP.A.3	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.
	SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
	SP.B.5	Summarize numerical data sets in relation to their context
	G.A.1	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.
Math-Geometry	G.A.2	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 in the context of solving real-world and mathematical problems.
	G.A.3	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. Apply these techniques in the context of solving real-world and mathematical problems.
	G.A.4	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.
Secondary Standards		
New York State (In consultation with the Common Core Math Standards)		
Math- Expressions & Equations	6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.
	6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers.
	6.EE.3	Apply the properties of operations to generate equivalent expressions.
	6.EE.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).
	6.EE.5	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.
	6.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
	6.EE.9	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. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.
Next Generation		
	MS.ESS2	Earth's Systems-The role of water in Earth's surface processes, weather and climate, and biogeology
	MS.ESS3	Earth Systems-Earth and Human Activity

UNIT:	Grade 6 – Unit 4
DATES:	March – June



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 4 explores the link between interconnectedness and collective action. There will be a focus on how nature is connected to modern lifestyles—from the medicine we use to the architecture we see. Themes stressed are: How Taoist principles relate to nature, "balances" in nature, nature in modern medicine, how humans, animals and plants depend on each other, the importance of biodiversity, how humans have incorporated mathematical and geometrical patterns found in nature into architecture, and the affect of population growth on the environment. The overall goal is for students to develop an understanding of the interconnection between their lifestyle and nature, how they depend on the 'products' of nature, and how they can be responsible 'protectors' of the environment.

SUSTAINABILITY INTEGRATION	
2.1	*Interconnectedness*
	Sub-standard and Concepts: ▪ **Systems** - Students describe the ecological, economic, political, and social systems in their community and can identify leverage points in the system to improve their community **Essential Questions:** o Where does the US obtain most of its energy from? (ie: renewables, coal, natural gas, nuclear) o What are the differences between energy sources? Are some energy sources cleaner? **Activity/Lesson Ideas:** ▪ Lesson - Students choose an energy source and describe—in general—what that energy type is how it is generated. Students think of the positive attributes and negative attributes for the type of energy they are assigned. What type of energy source powers the light bulb in their room or recharges their iPod? **Sub-standard and Concepts:** ▪ **Interdependency** - Students explain how natural and built communities are part of larger systems (e.g., farms as part of the regional watershed and food systems for cities, a mine as part of the regional economy) and the interrelationships that exist among those systems. **Essential Questions:** o How does human-made infrastructure (buildings, cars) interact with plants and humans? Are these interactions beneficial or harmful and why? Specifically, what types of chemicals do cars and buildings release into the atmosphere? How do plants and humans respond/interact with these chemicals? o What is photosynthesis and why is it important? **Activity/Lesson Ideas:** o Lesson - Students formulate a personal plan of how they can reduce their CO2 footprint through addressing: diet habits (reduce red-meat and dairy foods), energy use (turn off lights, walk, ride bicycle). **Essential Questions:** o How do humans, animals and plants depend on each other with regards to biodiversity? Why is biodiversity important? Do animals rely on plants and vice versa? (ie: bees pollinate flowers, snails live in shells, etc…) o How humans depend on nature for medicine (ie: aspirin)? What will

	happen if the rainforest is destroyed? **Activity/Lesson Ideas:** o Lesson - Students are split into two groups. Group 1 looks at the interconnection between the role of bees and flowers to determine how vital bees are to pollination (ie: animal-plant linkage). Group 2 looks into the source and origin of modern human medicine. What percentage of medicine comes from plants versus being manufactured in a laboratory? Look at the impact rainforest destruction (deforestation) is having on medicine and general health. They can use aspirin as an example of a medicine derived from a plant-source.
3.2	*Collective Action*
	Sub-standard and Concepts: ▪ **Democracy** - Students participate in a simulation to devise a national energy policy through negotiation, collaboration, and coalition building among three groups that make a democratic society: the state, civic organizations, and business. They explain how the practices of a democratic society can contribute to local and global sustainability. They participate as active citizens in the democratic process in the interest of sustainability, using a systems approach to make their actions more effective. **Essential Questions:** o How can we (students) collaborate with each other, our families, and our communities to become active citizens with regards to supporting sustainability in our homes and schools? o How can we use the power of democracy to encourage sustainability ideals? **Activity/Lesson Ideas:** o Student participation in the democratic process Students are exposed to the concept of democracy. In the first step, they are exposed to questions including: What are the different forms of governments in the world? How does our government work (ie: 3 branches)? What makes democracy special? Subsequently, in step 2, the students brainstorm how they can use democracy to support sustainability goals? Finally, in step 3, the students form groups and choose an environmental issue they are interested in. Students will research which politicians are active on that issue and craft a letter to that congressman/congresswoman describing their concerns. Students can also write to their local representative.

DAILY PLAN/TIME MANAGEMENT						
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

INTEGRATED UNIT PROJECT

Importance of biodiversity/ecology in our everyday lives

You are a doctor in the year 1800, before "modern medicine" was invented. You have a patient that is sick with the cold/flu. However, because no "robitussin" or other modern cold/flu medicine exists, you prescribe traditional medicines, using natural ingredients such as plants and herbs.

Part 1: Speaking to Family

- Talk to your family (father, mother, grandparents, brothers, sisters, aunts or uncles) and ask them what are the traditional medicines their culture uses to treat the common cold/flu.

Part 2: Researching your discoveries

- Research these traditional medicines.
- Where are these natural ingredients found? (forests, deserts) In which countries?
- Describe the location of where these ingredients grow (cold, hot, humid, sunny).
- How were these medicines made (boiled in water)?

Part 3: Reflecting on Answers

- Do modern scientists find scientific evidence that these traditional medicines actually work?
- Reflect on how cultures hundreds of years ago knew certain plants would work without the technology we have today.
- What does this tell you about the importance of the knowledge and traditions we get from our heritage/culture?

Part 4: Tying the Natural World with Human Impact

- Can these plants/herbs still be found today?
- Or are they endangered species because of destruction of the forests?

Part 5: Show-and-Tell

- Try to find the plant (alive or dried) and bring it into class for show-and-tell.
- Describe to your classmates what you have learned through your research.

Part 6: Incorporating the Democratic Process

- Is there any way to use the democratic process to preserve these plants?

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Reading-Literature	RL.6.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

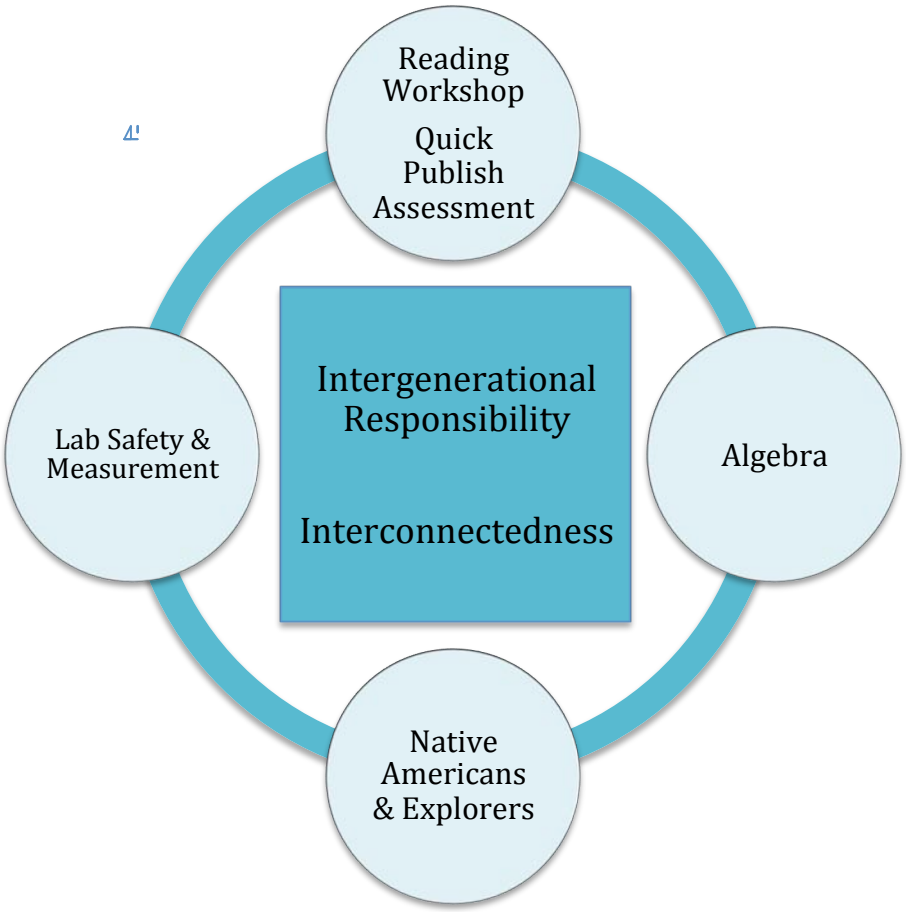
	RL.6.2	Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
	RL.6.3	Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.
	RL.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.
	RL.6.5	Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.
	RL.6.6	Explain how an author develops the point of view of the narrator or speaker in a text.
	RL.6.7	Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch.
	RL.6.8	n/a to literature
	RL.6.9	Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.
	RL.6.10	By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.
Reading-Informational Text	RI.6.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
	RI.6.2	Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
	RI.6.3	Analyze in detail how a key individual,

		event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).
	RI.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings
	RI.6.5	Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.
	RI.6.6	Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.**(**
	RI.6.7	Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
	RI.6.8	Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.
	RI.6.9	Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).
	RI.6.10	By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.
Writing	*Common Core Writing Standards are not applicable for this unit.*	
Math-Statistics & Probability	SP.A.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages*.
	SP.A.2	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.
	SP.A.3	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.
	SP.A.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
	SP.A.5	Summarize numerical data sets in relation to their context
Science- Reading Science & Technical Subjects	RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
	RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
	RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.
	RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.6-8.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
	RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Social Studies-Reading History	RH.6-8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH.6-8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.6-8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH.6-8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH.6-8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.6-8.9	Analyze the relationship between a primary and secondary source on the same topic.
Secondary Standards		
New York State	State standards are not applicable for this unit	
Next Generation	MS.LS3	Inheritance of Traits and Variation of Traits
	MS.LS4	Biological Evolution: Unity and Diversity

UNIT:	Grade 7 – Unit 1
DATES:	September



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 1 focuses on current events issues within our society, such as recycling, waste management, and cradle-to-cradle design. The unit addresses how past human activities and interactions between early Explorers and Native Americans impacted the future. These historical lessons can then be utilized to determine what we can do similar and differently in order to minimize the negative impacts human activities have on the environment, economy, and society. Students will learn about their lab equipment, what it is made of and how to recycle it. They will also learn applications of science measurements, such as in cradle-to-cradle production and water waste. Some of these measurement systems and calculations on recycling will be incorporated into algebra assignments. Students will write narratives about current events and about changes in recycling through time. The overall themes of intergenerational responsibility and interconnectedness (ex. recycling, resource depletion) are highlighted throughout the unit.

SUSTAINABILITY INTEGRATION	
1.1	*Intergenerational Responsibility*
	Sub-standard and Concepts: ▪ **Responsibility to Future Generations** - Students analyze and list their roles and responsibilities in their family, their school, and their community -- now and into the future. They demonstrate understanding of the cultural context of intergenerational responsibility (i.e. how some cultures consider and plan for seven generations into the future, etc. **Essential Question:** o How do current events affect your daily life, your family, and your community? o How do our actions (consumption and recycling) affect future generations? **Activity/Lesson Idea** ▪ Lesson – Write a narrative explaining how certain current events would affect you if you were an adult. How do these current events affect your family now? ▪ Lesson – Research and write a narrative explaining how recycling and waste creation in society has changed over time from the Native Americans – Present (the concept of "a throw-away society"). ▪ Lesson – Watch the documentary *Tapped* to examine how the bottled water industry affects our health, resources, and the environment. How many bottled water do you buy in a day? In a week? How much money can you make from recycling the plastic water bottles if they were 5 cents each? 10 cents each? (States in the U.S. have different recycling rates. Students can research the rates and compare the percentages of recycling efforts in different states.) Why do some states recycle more than others? Repeat calculations for aluminum cans, glass bottles, and paper. Recycling can also be calculated by weight in pounds or mass in kilograms. ▪ Lesson – Measurement possibilities: measure the amount of water that leaks out of a faucet on a daily basis OR measure the amount of water used daily via showers. What materials in the lab equipment can be recycled after their use (e.g. glass beakers, plastic eyewear, etc.)? ▪ Lesson – In social studies, examine the early encounters between the Native Americans and explorers. How did the activities of the Native Americans and explorers impact future generations? What could they have done differently that would have had different/less harmful impacts on the land and people? What would you do differently from the early explorers and what would you do the same?

2.1	*Interconnectedness*
	Sub-standard and Concepts: ▪ **Systems Thinking** - Students identify an unsustainable system (e.g.: apartheid, colonization. fossil fuel energy) and redesign it using systems thinking principles (e.g. long-term, interconnectedness, leverage points). ▪ **Cradle-to-Cradle Design** - Students explain the continuous cycling of biological and technical nutrients for a cradle-to-cradle designed product or system. **Essential Question:** o What types of unsustainable systems do you see in your everyday life and in your neighborhood? o If an oil and gas company came to you and wanted to drill on your land in Upstate NY, would you allow them? After reading the current news on hydrofracking, why or why not? What concessions would you hold the gas companies responsible for? **Activity/Lesson Idea** ▪ Lesson – Focus on reading current events and having students pick their own articles about a particular issue going on in the sustainability sphere. Ex. Hydrofracking/keystone pipeline (responsibility to future generations - continuing to burn fossil fuels), federal budget/sequestration (lack of opportunity for the poor and growing inequality in the US) ▪ Lesson – Recycling policies and waste management procedures of New York City (why isn't everything recycled? What are the economics of recycling? Why the lack of cradle-to-cradle design in everyday products? ▪ Lesson – In science, look at how science measurements can be used to create efficient cradle-to-cradle designs in daily products/activities.

DAILY PLAN/TIME MANAGEMENT						
	1 *list essential questions to be covered each day for each subject*	2	3	4	5	
	6	7	8	9	10	

INTEGRATED UNIT PROJECT
Our World News An audio-visual project that allows students to research and recreate news about science, sports, weather, environment, and many other areas of interest.

Part 1: Discuss and choose your news event and roles

- Students can choose from past and current events about the environment, their neighborhood, sports updates, weather forecast, etc.
- Students should also imagine and construct news broadcasts they think will air in the future.

Part 2: Research, create, write, and design…

- This project allows students to work on creative visuals, write their story and scripts, and perform.
- Allow students to take on roles: News anchors, field reporters, weather forecaster, director, editor, etc.
- Field reporters can interview people in the neighborhood to learn about different generations living in their local community.

Part 3: Perform and record

- Students can record their news segments and teachers can help them edit the film and put the segments together.
- This project will give the students an opportunity to critique their own public speaking, while having fun.
- On the last day, the class will get to watch what they have created! Popcorn anyone?!

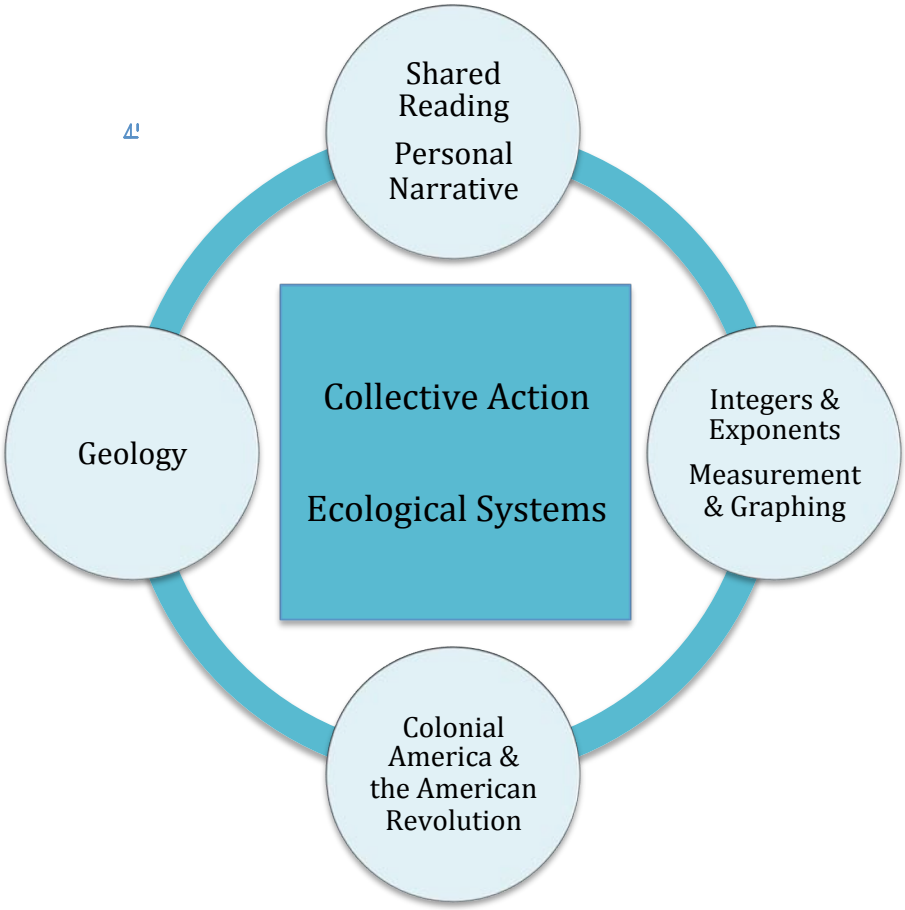
CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Reading - Literature	RL 7.1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
	RL 7.2	Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
	RL 7.3	Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).
	RL 7.6	Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.
Writing	W.7.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.

	W.7.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
	W.7.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7).
	W.7.6	Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.
	W.7.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
Math - Expressions & Equations	7.EEG.1	Use properties of operations to generate equivalent expressions.
	7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
	7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that “increase by 5%” is the same as “multiply by 1.05.”
	7.EEG.2	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

	7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.
	7.EE.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
Math - Number System	7.NSG.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
	7.NS.2d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
Reading - Science & Technology	RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
	RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

	RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Reading - History	RH.6-8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH.6-8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.6-8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH.6-8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH.6-8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).
	RH.6-8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.6-8.9	Analyze the relationship between a primary and secondary source on the same topic.
Secondary Standards		
New York State		
Next Generation	MS.ETS1	Engineering Design

UNIT:	Grade 7 – Unit 2
DATES:	October - November



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 2 has several overarching themes, including calculating individual and communal environmental impacts, concepts of carrying capacity, biodiversity, natural resources and the social and economic impacts these topics have on society. Collective Action and Ecological Systems are the sustainability standards that will be applied to all subjects during this unit. Students will study how war impacts greenhouse gas emissions and study what happened to colonists when they moved to America. Geology will be taught through the various sources of greenhouse gases and local ecosystem services. Students will calculate ecological and carbon footprints. They will keep a food log where they examine their own food intake and will write about it. They will read books and watch documentaries on our agricultural system and examine it through essays. Overall, in this unit there will be a specific focus on identifying each student's Ecological Footprint (including Carbon Footprint) in their community and how each individual contributes to the overall societal footprint.

SUSTAINABILITY INTEGRATION	
3.2	*Collective Action*
	Sub-standard and Concepts: ▪ **Designing a Sustainable System** - Using a Venn diagram, students log environmental, social, and economic impacts of a service or system that they use (e.g. transportation of food product). Then students brainstorm a more effective "cradle to cradle" life cycle for the system or product that is effective in terms of reusing or recycling technical nutrients and returning biological nutrients to nature. ▪ **Societal Footprint Calculation** - Students use an online tool (e.g. www.worldmapper.org) to examine graphic depictions of the relative footprints of different nations, first for overall ecological footprint, and then in specific areas (e.g. carbon emission, caloric consumption, wealth, house size, etc.). **Essential Question:** o How can you design a sustainable system and how can we all contribute to reduce environmental impacts? **Activity/Lesson Idea** ▪ Lesson – Read the book *The Green Book* by Jill P. Walsh. What were some reasons why the Earth was destroyed? Write a personal story about how we can save the Earth from being destroyed by reducing environmental impacts. Are there other solutions? Technology? ▪ Lesson – In math, calculate Societal Ecological Footprint. Compare the carbon footprint between different countries. What factors contribute to more carbon emissions from one country more than another? (Developed countries? Developing countries?) ▪ Lesson – In social studies, examine how war affected greenhouse gas emissions in Colonial America and during the American Revolution. E.g. gunpowder, higher industrial activity for weapon creation, explosions, increased deforestation, etc. How does war affect the greenhouse gas emissions in our society now?
2.2	*Ecological Systems*
	Sub-standard and Concepts: ▪ **Carrying Capacity** - Students provide an example of the maximum population that an environment can support indefinitely. ▪ **Biodiversity** - Students explain how the range of species and their habitats within an ecosystem interact and identify the physical environment and processes necessary for that interaction. Example: Students identify plant and animal species of their local region and describe how each species is dependent upon another species in the region through a graphic depiction linking each to at least one other by drawing connecting lines. ▪ **Natural Resources** (renewable & non-renewable) – Students investigate the natural systems in their local region and explore how humans have impacted

those systems, both positively and negatively. Examples: They identify natural and agricultural resources and where they come from (e.g.: wildlife, fish, plant, rock, water, soil, minerals, sunlight, and air). Students distinguish between natural resources and things made by humans (e.g., sand vs. cement, milk vs. ice cream, wheat vs. bread, sap vs. syrup, wildlife versus domesticated animals). Students describe a resource that will regenerate in their lifetime and identify resources that are finite.

- **Ecological Footprint (including Carbon Footprint)** - Using standard footprint calculation models, students determine the impact of their lifestyle decisions such as transportation, food, and housing choices.

Essential Questions:

- What is essential in creating a new sustainable society?
- Can the world be fed using traditional agriculture (Carrying Capacity)?
- What are the natural resources in your environment? What are renewable? Non-renewable?

Activity/Lesson Idea

- Lesson – Read the book *The Green Book* by Jill P. Walsh. What were some reasons why the Earth was destroyed? Relate the concept of carrying capacity and the overstress placed on natural systems to a possible reason for societal collapse. What would students bring with them if they were starting a new life in a new world? Relate this story to Colonial America (social studies unit) and what early immigrants must have felt in uprooting their entire life and coming to a new, unknown land.
- Lesson – Read *The Jungle* by Upton Sinclair or *Omnivore's Dilemma* by Michael Pollan or *Fast Food Nation* by Erc Schlosser. How does the current state of agriculture affect biodiversity (the monoculture of cereals and livestock) and our natural systems (Is it sustainable?) what can be done from a personal and structural viewpoint to change the current system? Briefly touch upon the Farm Bill and grain subsidies in the US and their effect on food prices.
- Lesson – Watch the documentary "Food Inc." Have students write a narrative explaining how they would like our nation's food system to evolve. The structure and personal solutions that students can use to create change. Have students write a narrative about something that relates to the other subjects they are learning at this time. Go over this with the group the next day.
- Lesson – Daily Food Log: Keep track of the amount of food you eat. Calculate and compare the ratio of fruits and vegetables to meats, grains, and sweets.
- Lesson – In science, compare natural and anthropogenic sources of greenhouse gas emissions. How does volcanic activity contribute to greenhouse gas emissions? What kinds of chemical compounds are released by volcanic eruptions? What types of human activities

		contribute to greenhouse gas emissions? How do humans affect the geology and landscape on Earth? Land formations - how natural land formations influence man-made activity (e.g. food production) ▪ Lesson – In math, calculate your carbon footprint. Add the carbon footprint calculations of all the students in the class. How fast do the carbon footprint calculations increase as we add more and more people? Is this exponential or linear growth? Calculate the growth rates of greenhouse gas emissions over time and graph the results. What are the differences between exponential and linear growth? ▪ Lesson - Research the ecosystem services that your local habitats provide to the community. How much do these services cost?

DAILY PLAN/TIME MANAGEMENT					
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

INTEGRATED UNIT PROJECT

Living Museum: Past, Present, Future

Local View: This project allows students to learn how past human activities impacted New York City's social, economic, and environmental status and also how current human activities will influence future generations.

Part 1: Initial Research

- Each group of students chooses a time period and researches New York City during that particular time.

Part 2: Create

- Using the background knowledge and research, students can choose from many mediums, including art installations, live theatrical performances, music, etc. to illustrate their time period of New York City.

Part 3: Exhibition

- On the last day, students would create an interactive museum exhibit (in an auditorium or gym) to display the art and/or perform.

Or

Living Museum: Past, Present, Future

Global View: An analysis of how critical historical events changed the course of a country and how current events can potentially influence the country's future.

Part 1: Initial Research

- Each group would choose a different nation to research. They would determine what they believe is the most critical event in that nation's history that had the largest social,

economic, and/or environmental impact. They would also examine the major events occurring in the nation presently and predict how these events might impact the country's future.

Part 2: Create

- Using the background knowledge and research, students can choose from many mediums, including art installations, live theatrical performances, music, etc. to illustrate their country of choice.

Part 3: Exhibition

- On the last day, students would create an interactive "world" exhibit that relates to their specific country's culture, geological set design, etc.

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Reading - Literature	RL 7.1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
	RL 7.2	Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
	RL 7.3	Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).
	RL 7.6	Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.
	RL 7.10	By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.
Writing	W.7.1	Write arguments to support claims with clear reasons and relevant evidence.
	W.7.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

	W.7.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
	W.7.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
	W.7.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7).
	W.7.6	Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.
	W.7.7	Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.
	W.7.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
	W.7.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
	W.7.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Math - Number System	7.NS.G.1	Apply and extend previous understandings of operations with fractions.
	7.NS.1d	Apply properties of operations as strategies to add and subtract rational numbers.
	7.NS.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
	7.NS.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real-world contexts.
	7.NS.2c	Apply properties of operations as strategies to multiply and divide rational numbers.
Math - Statistics & Probability	7.SPG.1	Use random sampling to draw inferences about a population.
	7.SP.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.
	7.SPG.2	Draw informal comparative inferences about two populations.

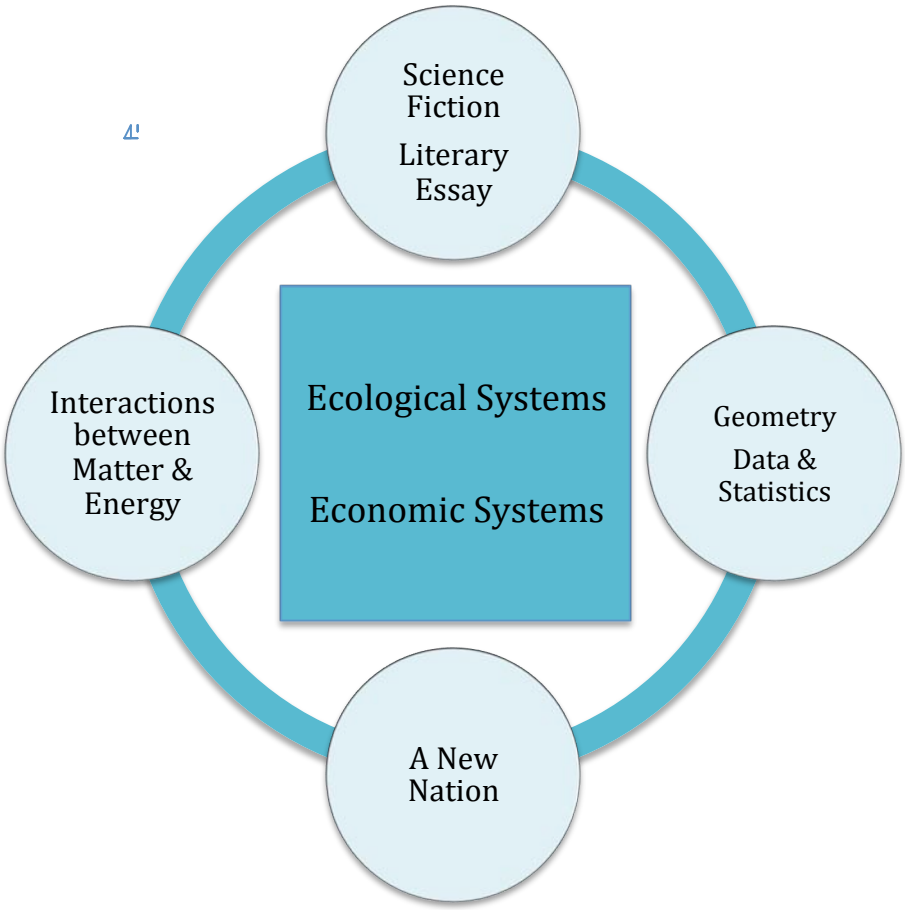
	7.SP.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.
	7.SP.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.
Math - Ratios & Proportional Relationships	7.RPG.1	Analyze proportional relationships and use them to solve real world and mathematical problems.
	7.RP.2	Recognize and represent proportional relationships between quantities.
	7.RP.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
	7.RP.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
	7.RP.2c	Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.
	7.RP.2d	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.
	7.RP.3	Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

Math - Geometry	7.GG.1	Draw construct, and describe geometrical figures and describe the relationships between them.
	7.G.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
	7.G.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
	7.G.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
	7.G.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
	7.G.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
	7.G.6	Solve real world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
Reading - Science & Technology	RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
	RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
	RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

	RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
	RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.6-8.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
	RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
	RST.6-8.10	By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.
Reading - History	RH.6-8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH.6-8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.6-8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH.6-8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH.6-8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).

	RH.6-8.6	Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).
	RH.6-8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.6-8.9	Analyze the relationship between a primary and secondary source on the same topic.
Secondary Standards		
New York State		
Next Generation	MS.ESS1	Earth's Place in the Universe
	MS.ESS2	Earth's Systems
	MS.ESS3	Earth and Human Activity

UNIT:	Grade 7 – Unit 3
DATES:	November 22 - January



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 3 addresses the interactions between ecological systems and economic systems and how one impacts the other in terms of health and efficiency. Students will learn about the impacts of the revolutionary war on natural resources and social equity. Students will learn about renewable and non-renewable resources and household energy use, using statistics to compare each student's usage. Students will read science fiction novels to learn about the importance of diversity and social equity. Discussions on how historical figures influenced various areas, such as science and politics, provide examples in how different subject areas can be interconnected in this unit.

SUSTAINABILITY INTEGRATION	
2.2	*Ecological Systems*
	Sub-standard and Concepts: ▪ **Natural Resources** (renewable & non-renewable) – Students investigate the natural systems in their local region and explore how humans have impacted those systems, both positively and negatively. Examples: They identify natural and agricultural resources and where they come from (e.g.: wildlife, fish, plant, rock, water, soil, minerals, sunlight, and air). Students distinguish between natural resources and things made by humans (e.g., sand vs. cement, milk vs. ice cream, wheat vs. bread, sap vs. syrup, wildlife versus domesticated animals). Students describe a resource that will regenerate in their lifetime and identify resources that are finite. ▪ **Biodiversity** - Students explain how the range of species and their habitats within an ecosystem interact and identify the physical environment and processes necessary for that interaction. Example: Students identify plant and animal species of their local region and describe how each species is dependent upon another species in the region through a graphic depiction linking each to at least one other by drawing connecting lines. ▪ **Carrying Capacity** - Students provide an example of the maximum population that an environment can support indefinitely. ▪ **Ecological Footprint (including Carbon Footprint)** - Using standard footprint calculation models, students determine the impact of their lifestyle decisions such as transportation, food, and housing choices. **Essential Question:** o How do society and the individual effect the natural environment and demonstrate techniques that allow us to measure these effects (ex. carrying capacity, carbon footprint, decline in the Earth's biodiversity)? **Activity/Lesson Idea** ▪ Lesson – Read the book *The Giver* - This story revolves around the idea of "sameness". Relate this "monoculture" society to biodiversity. Why is variety good in society and the environment? Have students research and write a short report about an organism that is close to extinction. What are the benefits of halting species extinction? ▪ Lesson – In math, design a method for calculating the carrying capacity of Brooklyn. Calculate the amount of additional resources and services needed to provide for a doubling in NYC's population (ex. food, water, housing, sanitation, energy etc.). ▪ Lesson – In science, discuss renewable and nonrenewable resources. If ecological biodiversity continues to decline because of human activities, how might this impact our ability to acquire medical resources? Understand the origins of human products – pasta=wheat, plastic=oil, bacon=belly meat of a pig, cotton clothing=plant material, cement=limestone etc.

	▪ Lesson – In social studies, explore the effects of the revolutionary war on America's natural resources. What were the living conditions like for soldiers and describe the ways in which the soldiers of different races were treated differently?
2.3	*Economic Systems*
	Sub-standard and Concepts: ▪ **Equity** - Students compare the distribution of resources between two or more economic classes, and ethnic and cultural groups within their own community and afar. ▪ **Resource Scarcity** - Students analyze the use of a local natural resource (e.g. animal, mineral, vegetable, lumber, fish, and minerals) and consider the resources' ability or inability to regenerate at a sustainable level. ▪ **Energy Economics** - Students survey their own household energy uses, explore opportunities for increased energy efficiency and conservation, and then calculate potential savings over time. ▪ **Ecological Economics** - Students explain how a specific ecological region provides environmental, social and economic value. For example, a healthy rainforest as a storehouse of historical, current, and potential medicines of tremendous social and economic value. When this ecological diversity is gone, so is the economic and social value of its medicinal plants. ▪ **Food Systems** - Students analyze local, national and global food systems, demonstrating an understanding of the differences between industrial farming, factory farming, family farming, organic, and non-organic farming. They study the history of, and debates over, the U.S. Farm Bill, and related concepts including protectionism, free trade, and fair trade in the context of food. **Essential Questions:** o Why is a moderate degree of social equity important for a sustainable future? o What is the economic significance of a healthy and thriving ecological region? o How has resource scarcity changed the course of history (ex. many invasions and wars have been fought because of a lack of natural resources)? **Activity/Lesson Idea** ▪ Lesson – Read the book *Harrison Bergeron*. This entire short story is centered on the idea of social equity. Discuss income equality today and the lack of opportunity felt by many economic/social classes today. Have students write about the concept of social equity. How should government be involved in dictating a certain minimum level of opportunity for all citizens? ▪ Lesson – In math, calculate the size and shapes of renewable energy technologies such as solar panels and wind turbines. How many solar panels can fit on the roof of a house, apartment, or building?

	▪ Lesson – *Energy Economics*: How much energy does your household use in a month? What if your home had solar panels? How much energy can the solar panels generate in one month in your neighborhood? (During the summer?) How much can you save on the electricity bill if your home had solar panels? ▪ Lesson – In math, calculate your daily usage of natural resources such as water. Compare your consumption with your classmates and add them up. What are the mean, median, and mode of the class? ▪ Lesson – *Resource Scarcity*: What kinds of resources are scarce in your environment? What resources are abundant? ▪ Lesson – In science, investigate what is needed for renewable energy to become economically viable. Why hasn't the world run out of oil? Understand the various petroleum products (crude oil, gasoline, natural gas, coal) by teaching students about their source location and overall environmental impact. What is the economic value of a healthy watershed (explain the importance of the Catskill mountain watershed in providing clean drinking water for NYC)? Why doesn't NYC have to filter their drinking water? Calculate the monetary savings of not having to filter millions of gallons of water daily. ▪ Lesson – In social studies, examine how the lack of social equity between the British and the Americans affect their relationship. How did resource scarcity ultimately determine the outcome of the war?

DAILY PLAN/TIME MANAGEMENT					
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

INTEGRATED UNIT PROJECT

Court Case

An interactive project that involves putting on a mock trial about a historical or current event that is taking place in the world. Many different topics can be pursued including environmental justice, civil/human/animal rights or climate change.

Part 1: Decide on a Topic

- Research the background around the issue. Who are the different stakeholders?
- Try and include the sustainability framework of social equity, natural resource consumption, ecological economics and resource scarcity in your thought process especially if analyzing an environmental issue such as the Clean Water/Air Act.

- Research the United States Judicial system. Who are the main actors during a court case? What is the "language" of the courtroom?
- Decide on a court case. Why is it an important concept? How will or did the decision affect your lives?

Part 2: Choose roles for the Trial

- Divide into roles (Judge, Witnesses, Defendants, Prosecutors, Jurors, Court Reporters, Lawyers, Sketch Artist etc.)
- Depending on position, research anticipated questions and prepare for trial.
- The lawyers from each side should put-together a coherent plan for their defense/prosecution. The judge must decide and approve a witness list and devise a time schedule for the day in conjunction with the teacher.

Part 3: Final day – Court Case

- Arrange the room accordingly and start procedures!

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Reading - Literature	RL 7.1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
	RL 7.2	Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
	RL 7.3	Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).
	RL 7.4	Determine the meaning of words and phrases as they are used in a text, including figurative, and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.
	RL 7.5	Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.
	RL 7.6	Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.
Writing	W.7.1	Write arguments to support claims with clear reasons and relevant evidence.

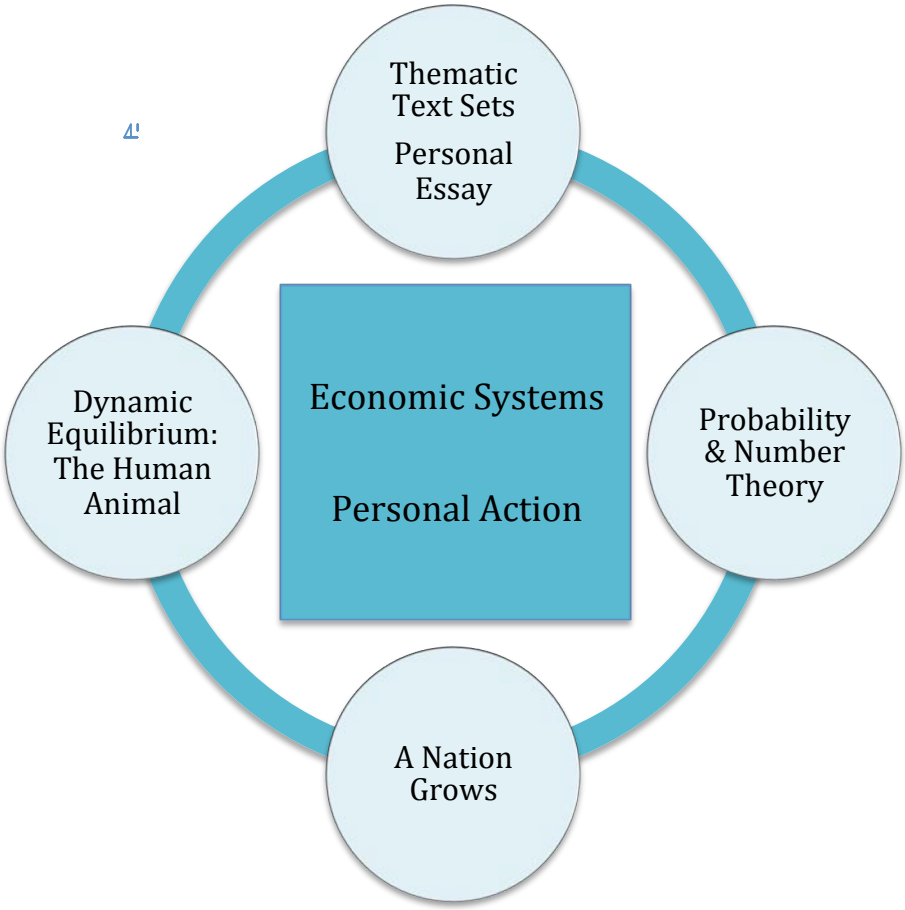
	W.7.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
	W.7.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
	W.7.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7).
	W.7.6	Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.
	W.7.7	Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.
	W.7.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
	W.7.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
	W.7.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Math - Geometry	7.GG.1	Draw construct, and describe geometrical figures and describe the relationships between them.
	7.G.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
	7.G.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
	7.G.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
	7.G.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
	7.G.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
	7.G.6	Solve real world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
Math - Ratios & Proportional Relationships	7.RPG.1	Analyze proportional relationships and use them to solve real-world and mathematical problems.
	7.RP.3	Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.
Math - Statistics & Probability	7.SPG.1	Use random sampling to draw inferences about a population.

	7.SP.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.
	7.SPG.2	Draw informal comparative inferences about two populations.
Reading - Science & Technology	RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
	RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
	RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
	RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.6-8.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
	RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

	RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Reading - History	RH.6-8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH.6-8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.6-8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH.6-8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH.6-8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).
	RH.6-8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.6-8.9	Analyze the relationship between a primary and secondary source on the same topic.
Secondary Standards		
New York State		
Next Generation	*The Next Generation standards are not applicable to this unit*	

UNIT:	Grade 7 – Unit 4
DATES:	January – March



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 4 centers on the overarching theme of food production and food systems ranging from an individual level to a global level. It will address how daily individual choices have impacts on society, as well as how governmental and economic regulations influence these daily choices. Students will learn about the growth of the US in terms of governance styles and social equity as well as natural resource availability and use. Students will learn about the energy inputs to the human body and to society and will learn probability through examination of long-term availability of natural resources. They will read *The Hunger Games* and examine it for issues of resource use and social equity. Additionally, students will keep a daily food log that will be encompassed in all subjects.

SUSTAINABILITY INTEGRATION	
2.3	*Economic Systems*
	Sub-standard and Concepts: ▪ **Equity** - Students compare the distribution of resources between two or more economic classes, and ethnic and cultural groups within their own community and afar. ▪ **Resource Scarcity** - Students analyze the use of a local natural resource (e.g. animal, mineral, vegetable, lumber, fish, and minerals) and consider the resources' ability or inability to regenerate at a sustainable level. ▪ **Ecological Economics** - Students explain how a specific ecological region provides environmental, social and economic value. For example, a healthy rainforest as a storehouse of historical, current, and potential medicines of tremendous social and economic value. When this ecological diversity is gone, so is the economic and social value of its medicinal plants. ▪ **Food Systems** - Students analyze local, national and global food systems, demonstrating an understanding of the differences between industrial farming, factory farming, family farming, organic, and non-organic farming. They study the history of, and debates over, the U.S. Farm Bill, and related concepts including protectionism, free trade, and fair trade in the context of food. **Essential Question:** o How does equity vary globally in terms of social welfare, including food access, economic development, and environmental health, and how do these discrepancies occur? o How does a country's accessibility to resources affect their imports/exports, relationships with other countries? o How did the ecological benefits affect the development of the United States? Did different areas develop more or less due to the availability of the region's environmental, social, and economic benefits? What would have happened if resources were not available at that time? o How does the food that we consume produced and what are the differences between various food production processes? **Activity/Lesson Idea** ▪ Lesson – Read the *Hunger Games* and examine how resource extraction impacted the environment in this fictional world. What countries or regions around the world import most of their own food and/or natural resources (Middle East, Southwest US, Sub-Saharan Africa)? Examine the United States: Is our country deficient in certain goods (oil, rare-earth metals, manufactured goods etc.)? Do we rely heavily on certain imports? ▪ Lesson – Students examine the methods used by the Capitol to control the population. How is this similar to methods used by totalitarian states throughout history and present-day? As the US grew as a nation, what regrettable methods did our government use to repress certain minority populations (the genocide of Native

	Americans, Jim Crow Laws, Japanese imprisonment camps during WWII)? ▪ Lesson – Analyze the history of the United States during its developing years. What resources were lacking that prevented faster growth? Do we have those resources now? What resources did they have then that is now scarce for us and is that due to poor resource management? ▪ Lesson – Students will keep a daily food log that will track the amount of food they eat. Have them determine where what they are consuming comes from. Is it more beneficial for the environment to shop from local vendors? If so, why? ▪ Lesson- In Math use probabilities of longevity of different resources and energy sources to determine long term probability of supply.
3.1	*Personal Action*
	Sub-standard and Concepts: ▪ **Personal Responsibility** - Students know the difference between actions that they can take themselves and those that require the involvement of other people, organizations, and government. They identify and carry out a personal action that will enhance quality of life in environmental, social/cultural, or economic sectors. **Essential Question:** o How do your personal actions impact the areas of environment, society, and economy? What actions require further involvement and what can they do on their own to make a difference? **Activity/Lesson Idea** ▪ Lesson – Examine the daily food log that students will keep in this unit and determine what changes they can make to benefit their personal health as well as benefit community issues. After the food products are consumed, what are the best ways to dispose of the remnants?

DAILY PLAN/TIME MANAGEMENT					
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

INTEGRATED UNIT PROJECT

Life of Pie

Students will learn the life cycle of a pizza of choice (variety of meat or vegetarian pizza), from how it started on the farm to how it ends up in their stomachs.

Part 1: Farm

- Allow students to germinate and plant a seed and observe how it grows.
- As students develop a relationship with their plants, they can research how farmers grow wheat for pizza dough, how they make cheese, and how animals are raised.
- Then, students can calculate the carbon and water footprints of each item.
- Relate this to the Social Studies topic of how A Nation Grows by investigating the types of resources they had back then and what kind of farming techniques they used.
- If time permits, allow students to have a field trip to a local community garden to see the growing fruits and vegetables.

Part 2: Food and Soul

- In science, the students can learn about the digestive system of the human body and draw a poster or make a diagram of how the pizza would travel through the body.
- Students can analyze how we use food as energy to fuel our bodies to function in everyday life.
- Discuss how food and exercise contributes to our daily health.
- If time permits, set aside about 20 minutes to allow students to exercise as a class. (Aerobics and stretching are fun to do together with music. This can happen in class or outdoors such as a park).

Part 3: Pizza Party!

- On the last day, allow students to showcase their plants and posters or diagrams of the human body.
- Let students assemble pizza ingredients, bake, and eat pizza!
- If cooking is not possible, there are other alternatives that do not require cooking. Just assemble ingredients and eat!

CURRICULUM STANDARDS ADDRESSED

Primary Standards

Common Core

Reading - Literature	RL 7.1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
	RL 7.2	Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
	RL 7.3	Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).

	RL 7.4	Determine the meaning of words and phrases as they are used in a text, including figurative, and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.
	RL 7.5	Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.
	RL 7.6	Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.
Writing	W.7.1	Write arguments to support claims with clear reasons and relevant evidence.
	W.7.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
	W.7.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
	W.7.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7).
	W.7.6	Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.

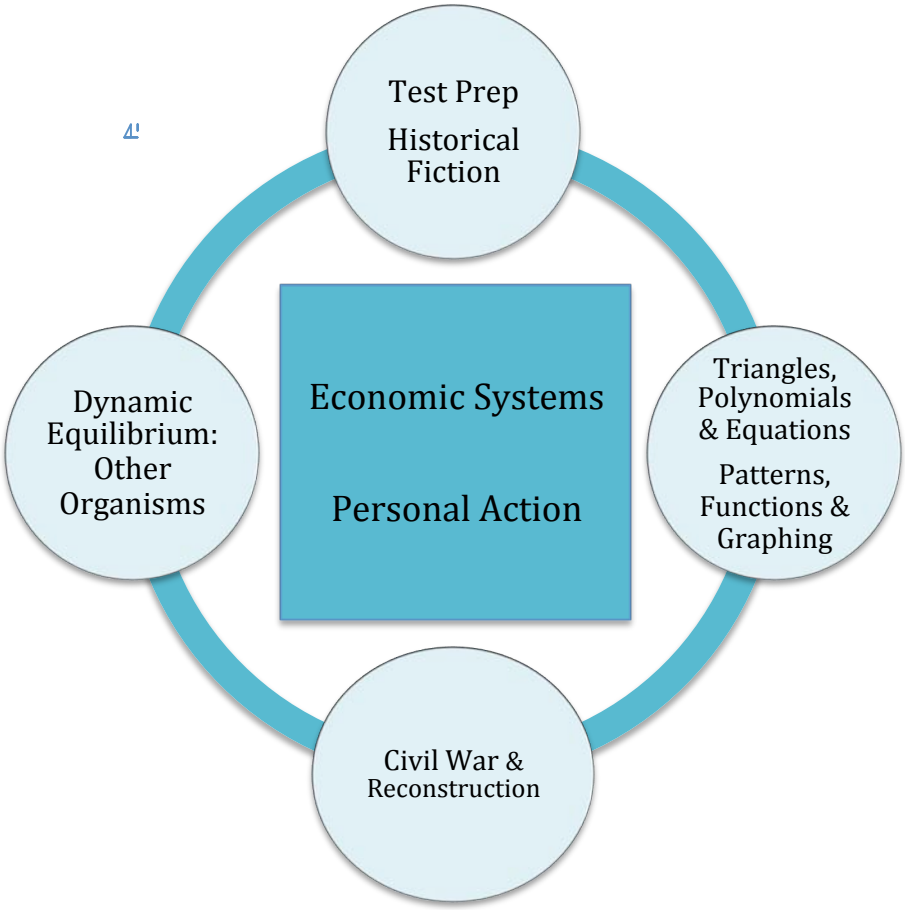
	W.7.7	Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.
	W.7.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
	W.7.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
	W.7.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
Math - Number System	7.NSG.1	Apply and extend previous understandings of operations with fractions.
	7.NS.1b	Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
	7.NS.1c	Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
	7.NS.G.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

	7.NS.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
	7.NS.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real-world contexts.
	7.NS.3	Solve real world and mathematical problems involving the four operations with rational numbers.1
Math - Statistics & Probability	7.SP.3	Investigate chance processes and develop, use, and evaluate probability models.
	7.SP.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
	7.SP.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.
	7.SP.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
	7.SP.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
Reading - Science & Technology	RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.

	RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
	RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
	RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.6-8.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
	RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Reading - History	RH.6-8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH.6-8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.6-8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH.6-8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.

	RH.6-8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).
	RH.6-8.7	Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
	RH.6-8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.6-8.9	Analyze the relationship between a primary and secondary source on the same topic.
Secondary Standards		
New York State		
Next Generation	MS.LS4	Biological Evolution: Unity and Diversity

UNIT:	Grade 7 – Unit 5
DATES:	March 21 – June



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 5 addresses issues of how personal responsibility and action shape the broader social structures of various communities. It also questions the variation between multiple perspectives and explores the differences exhibited by numerous cultures. Students will learn about population dynamics and cultural diversity through the Civil War. Students will learn about biodiversity, the social structures of various organisms, and graph population trends. Across the unit, students will apply critical thinking and problem solving techniques to address existing issues of resource depletion and overpopulation.

SUSTAINABILITY INTEGRATION	
3.1	*Personal Action*
	Sub-standard and Concepts: ▪ **Personal Responsibility** - Students know the difference between actions that they can take themselves and those that require the involvement of other people, organizations, and government. They identify and carry out a personal action that will enhance quality of life in environmental, social/cultural, or economic sectors. **Essential Questions:** o What benefits can be achieved through social action versus individual action? What individual actions can be used to influence a community as a whole? **Activity/Lesson Idea** ▪ Lesson – In science, students will study the social systems in other organisms (e.g. bees having a matriarchal social structure) and learn what actions are done as a group and what is done as an individual. Does this social structure help maintain homeostasis within the community? How do these other organisms' social structure compare to humans? ▪ Lesson – Read *Two Sisters of Gettysburg*. Did the sisters take personal responsibility of their actions? Have you ever regretted not standing-up for a stranger/friend/family-member and happened to regret it at a later date?
2.4	*Social and Cultural Systems*
	Sub-standard and Concepts: ▪ **Cultural Diversity** - Students explore their own cultural identity and the identity of their peers and people in their community and the different views and values that each culture brings to the community. ▪ **Multiple Perspectives** - Students consider an issue or challenge related to sustainability, through a variety of lenses or perspectives and they explain how approaching that issue or challenge from different perspectives may result in different decisions and outcomes. ▪ **Population Growth** - Students graph the human population growth of a community over time and investigate how the growth or decline of a population affects a community's social, economic, and environmental sustainability, including factors that may contribute to unsustainable population growth (e.g. lack of access to reproductive health care, lack of education, poverty, and resource scarcity). ▪ **Quality of Life Indicators** - Students define indicators that contribute to their own and their community's quality of life and assess their and their community's quality of life based on these indicators. **Essential Questions:**

	o How does the presence of different cultures influence the dynamics of local and global communities? o How do multiple perspectives influence the interactions of humans in a society? o Is there a pattern in birth rates in different countries around the world? Which countries are have high and low birth rates? Why do we see these trends? o What factors influence birth rates? Mortality rates? (Health care, education, money, resources, etc.) **Activity/Lesson Idea** ▪ Lesson – Students will read *Two Girls of Gettysburg* – a historical fiction story centered around two sisters in Gettysburg Pennsylvania that are torn in their alliances, yet as devoted as sisters, each girl finds herself grappling with the senseless brutality of war, and the sacrifices that must be made in order to survive. Main themes of multiple perspectives and respect for family vs. society are present. In what way do the books multiple perspectives stem from having different cultural backgrounds? ▪ Lesson – How do the cultural perspective during the Civil War differ from how they are today? Do you think the level of tolerance for cultural diversity is beneficial or hindering to a society? ▪ Lesson – Apply the reading *Two Girls of Gettysburg* and have students write a response to the book. Would you have made decisions that were different from those made by the two sisters based on your own perspective? Explain why or why not. When is okay to go against the wishes of your family? ▪ Lesson – In math, students would plot the population growth over time for a country of their choosing and determine if this growth is exponential or linear. They would then compare their graph with other students' graphs to answer the essential questions. ▪ Lesson – In social studies, students will learn about the history of the Civil War and Reconstruction. There was population decline during the Civil War and population growth during Reconstruction. What factors during this time contributed to unstable populations? ▪ Lesson – Students would then research the company they plotted the birth rate for to determine what factors might have led to the low/high birth rates in that country. They would also compare the factors they think determine birth/death rates to countries with different populations to see if these factors vary.

DAILY PLAN/TIME MANAGEMENT					
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

INTEGRATED UNIT PROJECT
Create a Company! Part 1: Create your Company - Create a poster that describes your business, including name, product, and logo. - Write a business plan, including what raw goods you will need, timeline of product production, and who your target market will be. Part 2: Marketing your business - Write a script for a radio or television commercial. - Be sure to explain how your good/service benefits society and how you will minimize impacts on other organisms/ecosystems when developing your business - Where will you market the good/service your company provides? Are there cultural or societal factors that would prevent you from distributing your product in a specific part of the world? If so, is this a responsible personal decision? Part 3: Create your product - Each student will create a demo product. They will then display their product/service in a "market". Students can then go from booth to booth with fake money and buy what products they like.

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Reading - Literature	RL 7.1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
	RL 7.2	Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
	RL 7.3	Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).

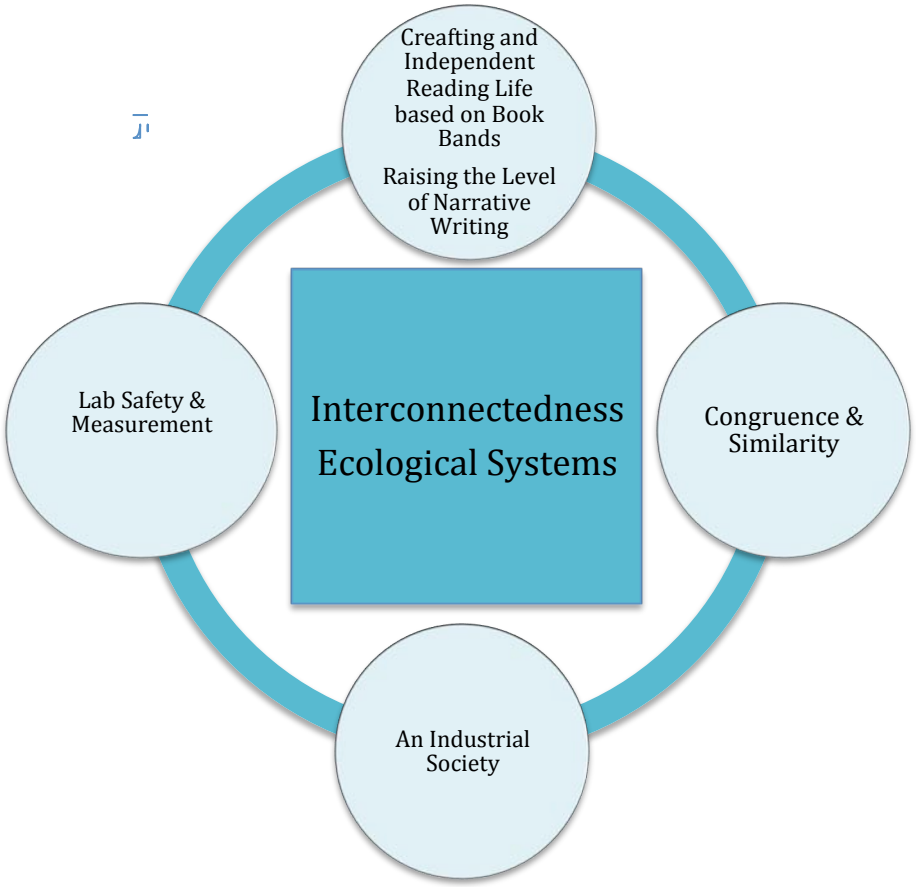
	RL 7.4	Determine the meaning of words and phrases as they are used in a text, including figurative, and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.
	RL 7.5	Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.
	RL 7.6	Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.
Writing	W.7.1	Write arguments to support claims with clear reasons and relevant evidence.
	W.7.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
	W.7.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
	W.7.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
	W.7.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7).
	W.7.6	Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.

	W.7.7	Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.
	W.7.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
	W.7.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
	W.7.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
Math - Geometry	7.G.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
	7.G.6	Solve real world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
Reading - Science & Technology	RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
	RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
	RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

	RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
	RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.6-8.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
	RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
	RST.6-8.10	By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.
Reading - History	RH.6-8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH.6-8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.6-8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).

	RH.6-8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH.6-8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).
	RH.6-8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.6-8.9	Analyze the relationship between a primary and secondary source on the same topic.
Secondary Standards		
New York State		
Next Generation	MS.LS4	Biological Evolution: Unity and Diversity
	MS.LS3	Heredity: Inheritance and Variation of Traits

UNIT:	Grade 8 – Unit 1
DATES:	September 1 – October 1



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 1 establishes a baseline on which the later units build. It encourages students to read recreationally rather than just for class, covers basic geometric concepts, gives an overview of lab safety, and poses a question about American history that students will continue to explore throughout the year. The first step in community involvement is identifying the systems within those communities and explaining how they operate. The first step in sustainability education is weighing the impact that humans have with how much the Earth can hold. This unit is an introduction to all of those ideas.

SUSTAINABILITY INTEGRATION	
2.1	*Interconnectedness*
	Sub-standard and Concepts ▪ **Systems** – Students describe the ecological, economic, political, and social systems in their community and can identify leverage points in the system to improve their community

	Essential Questions o How would you describe the current 'system' of our lives? How do things work? Who makes the decisions? How might technology change the system? How did technology change the system pre-industrialization? How did immigration of new people change the system? o Would you describe the systems of people in neighboring communities as similar or congruent? **Activity/Lesson Idea** ▪ Lesson – Create a Venn Diagram comparing the community system in your neighborhood, the same neighborhood's community system during industrialization, and another country or state. Use the historical fiction/non-fiction book band to help you gather information about your neighborhood during the industrialization period.
2.2	*Ecological Systems*
	Sub-standard and Concepts ▪ **Carrying Capacity** – Students provide an example of the maximum population that an environment can support indefinitely. **Essential Questions** o What is the carrying capacity of your home? What would life be like if you exceeded it? What do you estimate is the carrying capacity for the United States? What tools could we use to measure your estimate? What could we do to increase our carrying capacity? What did we do to increase our capacity during mass immigration? **Activity/Lesson Idea** ▪ Lesson – In groups, students will estimate the current carrying capacity of the United States based on total space (3,794,083 sq miles) and average home size (2,169 sq feet). Detail the steps you took to solve this problem. Remember to use congruent units. Compare class calculations and discuss the following questions: is dividing housing space a reliable way to determine carrying capacity? Why or why not? What might be a better way? ▪ EXTRA CREDIT: Try it your way and see if the answer is more accurate. Consider why it still might be inaccurate. ▪ **Ecological Footprint** – Using standard footprint calculation models, students determine the impact of their lifestyle decisions such as transportation, food, and housing choices. **Essential Questions** o What's your ecological footprint? How might it compare to someone from the Industrial period (what would be similar vs. congruent)? Is the

	ecological footprint a better way to determine carrying capacity? **Activity/Lesson Idea** • Lesson – Split your paper into two columns. On the left, note all the forms of measurement throughout the ecological footprint quiz (e.g. how many glasses of water -> cups/fl. oz). On the right, note the corresponding science tool to measure that unit (e.g. beaker, volumetric cylinder).

DAILY PLAN/TIME MANAGEMENT

	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

INTEGRATED UNIT PROJECT

Take time to think about how much you consume individually. Using the measurements we learned in science (gallons, liters, pounds, grams, inches, feet, etc.) estimate 3 of your needs. Complete this process in the following steps.

Making Estimates

1. Estimate how much water (choose an appropriate unit of measurement) you use in a day. Remember to consider water you consume (drinking, cooking) as well as water you do not consume but contaminate (showers, hand washing).
2. Estimate how much food (choose an appropriate unit of measurement) you consume in a day. Think about whether this food needs space to grow, or needs processing.
3. Estimate how much space (choose an appropriate unit of measurement) you need to be happy. Imagine if you could not leave your space and everything you do must be done there.

Multiplying Estimates

1. First, multiply your food and water figures for a full year. List your annual food, water and space requirements.
2. Now imagine you live in a city with 19 other people (20 including you). What are the annual water, food, and space requirements for this mini-city? What other space might your city need besides living space? Denote this amount as working space. Add both your living and working space together to determine total space.
3. Estimate the carrying capacity of your city.

Analysis of City Capacity & Immigration Scenario

You have mapped out the perfect amount of space and resources for your mini-city. Great job! In fact, your city is so great that 20 more people have decided to move in. With this in mind, complete the following tasks:

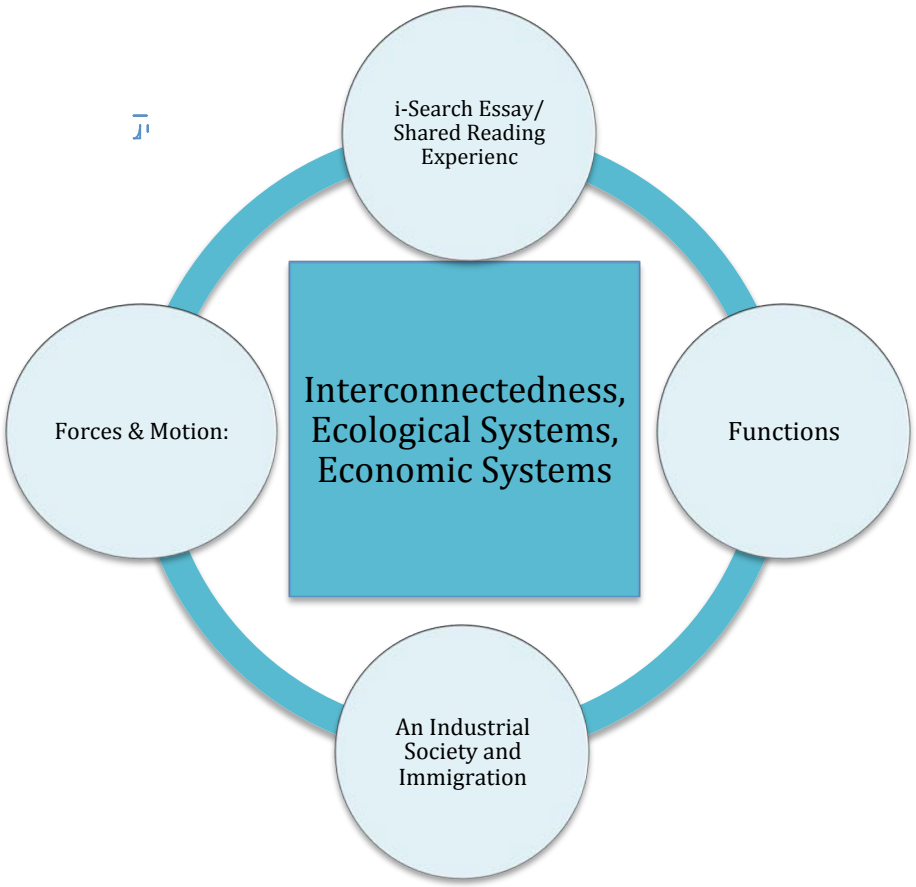
1. Calculate the annual amount of food and water resources needed now and calculate the amount of necessary living space for 40 people.

2. Your city has very strict borders and you cannot increase your total space. Do you have enough room for 20 more people to live comfortably? If not, what changes can you make to your city to provide comfort? Do these changes affect your city's carrying capacity? If so, how? If not, why not? If more people asked to move to your city, would you let them in?
3. Remember that all your calculations are based off of your own personal requirements. How do you feel about your requirements now?

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Language	L.8.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
	L.8.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
	L.8.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
	L.8.4	Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on *grade 8 reading and content*, choosing flexibly from a range of strategies.
	L.8.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
	L.8.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
Reading - Literacy	RL.8.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
	RL.8.5	Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.
	RL.8.6	Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.
Math - Geometry	8.G.A.1	Verify experimentally the properties of rotations, reflections, and translations:
	8.G.A.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
	8.G.A.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
	8.G.A.4	Understand that a two-dimensional figure is similar to another if

		the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
	8.G.A.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.
Reading – Science & Technology	RST.8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST.8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.
	RST.8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST.8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Reading – History	RH.8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH.8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH.8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH.8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).
	RH.8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.8.9	Analyze the relationship between a primary and secondary source on the same topic.
Secondary Standards		
New York State		
Next Generation	MS.ETS1	

UNIT:	Grade 8 – Unit 2
DATES:	October 1 – November 22



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 2 covers industrialization. Industrialization grows out of a dependence on machines, which is representative of man's changing relationship to nature. The math unit explores the rules that govern machines, the science unit explores the forces that govern Earth and its functioning systems, and the English & Language Arts unit asks students to write and read about their own cultural history. In terms of sustainability, the unit is focused on a more utilitarian view of natural resource consumption and the move towards urbanization. During this unit, students will see the ways in which people grew more distant from processes that govern Earth even as they deepened their understanding of them. The overarching question is just how industrialization affects the Earth and how much change the Earth can handle.

SUSTAINABILITY INTEGRATION	
2.1	*Interconnectedness*
	Sub-standards and Concepts ▪ **Systems** - Students describe the ecological, economic, political, and social systems in their community and can identify leverage points in the system to improve their community

	Essential Questions o Why did such a large majority of society work in factories? What are the psychological consequences of working in a typical early American factory? How did factory work change the cultural demographics of America during that time? **Activity/Lesson Idea** ▪ Lesson – Students will research and read interviews from people who worked in factories at the time and respond in writing to explain how they would've improved conditions. **Sub-standard and Concept** ▪ **Interdependency** - Students explain how natural and built communities are part of larger systems (e.g., farms as part of the regional watershed and food systems for cities, a mine as part of the regional economy) and the interrelationships that exist among those systems. **Essential Questions** o How did people who immigrated from different cultures get along? Did they learn anything from one another? o How are factories like functions? Why did we need factories then? Do we still use factories now? Are they any different? What do we need factories for? **Activity/Lesson Idea** ▪ Lesson – Students will locate a factory or former factory in their borough and use math terms to describe what goes in (inputs) and what is produced (outputs). Describe how much input it takes to produce a set amount of output.
2.2	*Ecological Systems*
	Sub-Standards and Concepts ▪ **Natural Resources** - Students investigate the natural systems in their local region and explore how humans have impacted those systems, both positively and negatively. Examples: They identify natural and agricultural resources and where they come from (e.g.: wildlife, fish, plant, rock, water, soil, minerals, sunlight, and air). Students distinguish between natural resources and things made by humans (e.g., sand vs. cement, milk vs. ice cream, wheat vs. bread, sap vs. syrup, wildlife versus domesticated animals). Students describe a resource that will regenerate in their lifetime and identify resources that are finite. **Essential Questions** o Why might some sociologists view cultural diversity as a natural resource? o What are some of the natural forces on the Earth? How do they affect the availability of our natural resources? How does gravity affect bodies of water like rivers or oceans? How does centrifugal force benefit us?

	Activity/Lesson Idea ▪ Lesson – Students will illustrate friction, gravity, momentum, force, inertia, acceleration, and opposite reactions with examples from nature. (ex. Friction of tectonic plates causes earthquakes, acceleration in fast moving animals, the momentum of a rushing stream, trees withstanding the force of storms, etc.)
2.3	*Economic Systems*
	Sub-standards and Concepts ▪ **Ecological Economics** - Students explain how a specific ecological region provides environmental, social and economic value. For example, a healthy rain forest as a storehouse of historical, current, and potential medicines of tremendous social and economic value. When this ecological diversity is gone, so is the economic and social value of its medicinal plants. **Essential Questions** o What is the economic value of our material belongings? What is the economic value of our natural resources? What is the economic value of a forest? What is the economic value of a factory or industrial area? What about environmental and social values? **Activity/Lesson Idea** ▪ Lesson – Using a blank scale worksheet, students can "weigh" the benefits and costs of using a "new American state" or "new American island" as a factory, leaving it in it's natural state, or some other combination of options. Take a class tally of which weighs more, or which option the majority of the class thinks is the most beneficial. Discuss reasoning and debate ideas.

DAILY PLAN/TIME MANAGEMENT					
	1 *list essential questions to be covered each day for each subject*	2 *insert additional days as needed*	3	4	5
	6	7	8	9	10

MEANINGFUL PROJECT
You have just immigrated to America from the home of your ancestors and purchased a factory with your family's savings. With this in mind complete the following tasks: Part 1: Designing your Factory - Create a model or draw a poster sized illustration of your factory. - Your factory should employ at least 3 forces of motion to produce outputs. Be sure to label where each force is taking place and how it is helping overall production.

- Also be sure to depict where your workers will be and what kinds of conditions your factory has.

Part 2: Describing you Factory

- Write an essay to accompany your illustration.
- Be sure to explain what your factory produces and what raw materials are necessary for production. Speak briefly about how much input you will need for minimal output.
- Describe who you will hire in your factory (men, women, children, etc.) and what type of work they will be doing. Be specific about their hours, pay and conditions.
- Analyze the forces of motion taking place in your factory. How is each of them helpful? Could your factory run without them?

Part 3: Building Factory Row (Peer-to-Peer Evaluation)

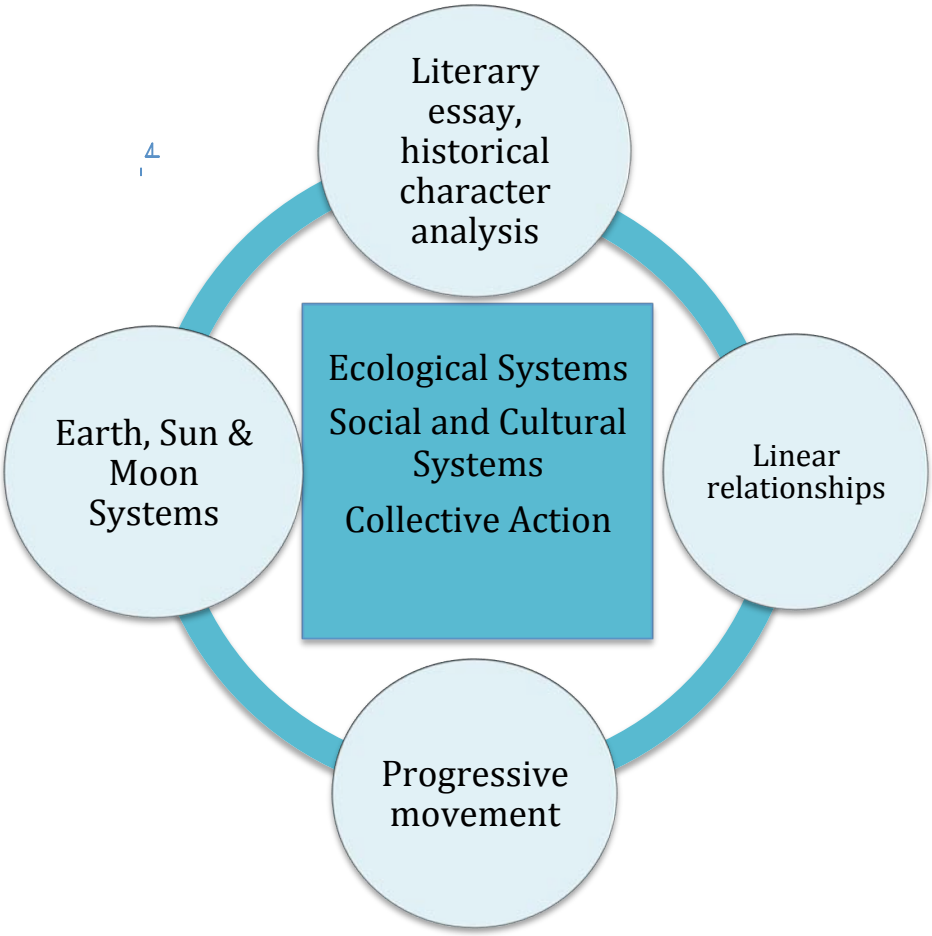
- The teacher will assemble all the factories in a street block fashion. Students will go around the room evaluating each others' factories on the following criteria: amount of resources needed for output, working conditions, and creative use of forces.

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Reading - Literature	RL 8.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
	RL 8.2	Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
	RL 8.3	Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision
Writing	W.8.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
Math - Functions	8.F.A.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.
	8.F.A.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
	8.F.A.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
	8.F.B.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function

		in terms of the situation it models, and in terms of its graph or a table of values.
	8.F.B.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.
Math – Statistics & Probability	8.SP.A.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
	8.SP.A.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
	8.SP.A.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
	8.SP.A.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.
Reading – Science & Technology	RST.8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST.8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.
	RST.8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST.8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Reading -	RH.8.1	Cite specific textual evidence to support analysis of primary and

History		secondary sources.
	RH.8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH.8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH.8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).
	RH.8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.8.9	Analyze the relationship between a primary and secondary source on the same topic.
Secondary Standards		
New York State	PS1.1	
	PS5.1	
	PS5.2n	
Next Generation	MS.ETS1	

UNIT:	Grade 8 – Unit 3
DATES:	November 22 – December 23



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 3 broadens the scope of the Unit 2 by expanding earth systems study to study of the solar systems. The linear relationships in math help students understand the ways in which numbers have real-world significance, as the ability to solve and graph equations is crucial to understanding concepts such as carrying capacity and population growth concepts that arise in Social Studies. The increasingly progressive politics of the early 20th century also sparked an interest in conservation, which encouraged individual participation in maintaining strong relationships with the natural world. The literary aspects of the program focus on contextualizing real and fictional people in the time and place under study. The focus of the unit is the growing sense of community both between people and between people and nature during this time in history.

SUSTAINABILITY INTEGRATION	
2.2	*Ecological Systems*
	Sub-standard and Concepts: ▪ **Natural Resources** (renewable & non-renewable) – Students investigate the natural systems in their local region and explore how humans have impacted those systems, both positively and negatively. Examples: They identify natural and agricultural resources and where they come from (e.g.: wildlife, fish, plant, rock, water, soil, minerals, sunlight, and air). Students distinguish between natural resources and things made by humans (e.g., sand vs. cement, milk vs. ice cream, wheat vs. bread, sap vs. syrup, wildlife versus domesticated animals). Students describe a resource that will regenerate in their lifetime and identify resources that are finite. ▪ **Biodiversity** - Students explain how the range of species and their habitats within an ecosystem interact and identify the physical environment and processes necessary for that interaction. Example: Students identify plant and animal species of their local region and describe how each species is dependent upon another species in the region through a graphic depiction linking each to at least one other by drawing connecting lines. ▪ **Nature as Model and Teacher** - Students investigate designs and systems in nature that can serve as models for human-created sustainable products, services, and systems. **Essential Questions:** o How do earth systems compare to systems on other planets? What resources allow humans to live life on earth? How does biodiversity make our earth a unique? Are there linear relationships between the earth and other planets? What causes seasons to occur? How do tides change coastal environments? **Activity/Lesson Ideas:** ▪ Students are taken outside to a park or another outdoor area. They would be assigned to explore the area and then comment on how natural things in their environment seem to interact with one another. Do some things need other things to work properly? How can we use what we have learned in class to infer how the natural things around us interact with and rely on one another? How does the sun contribute to these interactions? They could then make a diorama to show how the grass/soil/trees/atmosphere interact with one another. This could be done in each season, and students could comment on how the changing seasons affect earth processes. We could incorporate global warming into seasonal discussions. ▪ How would earth's systems change if it rotated slower or faster? How do the sun and moon's rotations/processes?
2.4	*Social and Cultural Systems*
	Sub-standard and Concepts: ▪ **Citizenship** - Students explore a range of opportunities for civic engagement, including informed voting, grassroots activism, volunteerism, lobbying,

	involvement in non-governmental organizations, and working in government. ▪ **Resource Distribution** - Students compare the distribution of a common resource (e.g. money, food) of different groups of people in their own community, region, nation, or world and explain how this resource distribution affects sustainability. **Essential Questions:** o What is the role of the government to provide for a growing population and increasing inequality? What are the benefits and costs of conservation? Is it the government's responsibility? Does conservation get more or less expensive over time? How do we decide how to allocate resources fairly? What is a fair distribution? Who needs them and who does not? What are the connections between the progressive era and the size of the government? **Activity/Lesson Idea:** ▪ Land-use Project: Each student gets an acre of land to do with as they please and present their choices, guiding rationale, and incurred costs and benefits to the natural environment or to humans. ▪ Quality of Life Questions: Project with focus on quality of life. What adds to people's quality of life? What factors decrease or increase quality of life? Are the factors social? Environmental? Economic? ▪ Fairness, Democracy and Distribution of Resources Project: Split the class into different income groups and select one person from each group to participate in the "government" - a mini democratic society. The government will consider the following questions: what is a fair distribution? How can we attempt to redistribute resources? What is the fairest way to distribute resources? What would happen if the government did not step in and attempt to redistribute resources? What are the environmental resources that we need? How important is conserving land and resources to each group of income? ▪ Robin Hood passage reading and discussion
3.2	*Collective Action*
	Sub-standard and Concepts: ▪ **Democracy** - Students participate in a simulation to devise a national energy policy through negotiation, collaboration, and coalition building among three groups that make a democratic society: the state, civic organizations, and business. They explain how the practices of a democratic society can contribute to local and global sustainability. They participate as active citizens in the democratic process in the interest of sustainability, using a systems approach to make their actions more effective. **Essential Questions:** o How does a democratic society contribute to local and global sustainability? What about other forms of government? How does collective action affect change, as opposed to personal action? **Activity/Lesson Idea:**

	▪ Think of a time when you and a group acted collectively to achieve a goal. In groups of 4, students will come up with ways to use the democratic system/collective action to improve an environmental issue. When posed with an environmental problem, come up with a way that you Create a power point presentation presenting the environmental issue, the change you want to happen, and why that change should happen from the perspective of your group. How would you present this to a public official or representative? You can choose to be any stakeholder group you'd like to represent, or you can act as yourselves responding to the issue. Each member of the group must present at least one slide.

DAILY PLAN/TIME MANAGEMENT					
	1 *List essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

MEANINGFUL PROJECT

Design your own planet. You can use an actual globe, draw on a poster board or create any type of planet you would like.

<u>Part 1: Describe your planet in an essay:</u>

Be creative and detailed in your description of the planet. Talk about your government.

- What type of political system would you create?
- How will people react to their government and political leaders?
- How much will they participate in their government?

<u>Part 2: Draw/mold/create your planet out of the medium of your choice.</u>

Use the following questions to guide the creation of your planet.

- What would your planet look like?
- How many people will live on your planet?
- How much land and how much water will be on your planet?
- What will the land portions of your planet have on then?
- What resources would the people (or animal or aliens) need to live?
- What resources would be essential to life on your planet?
- How will the resources be distributed? Will your planet be in contact with any other

planets?

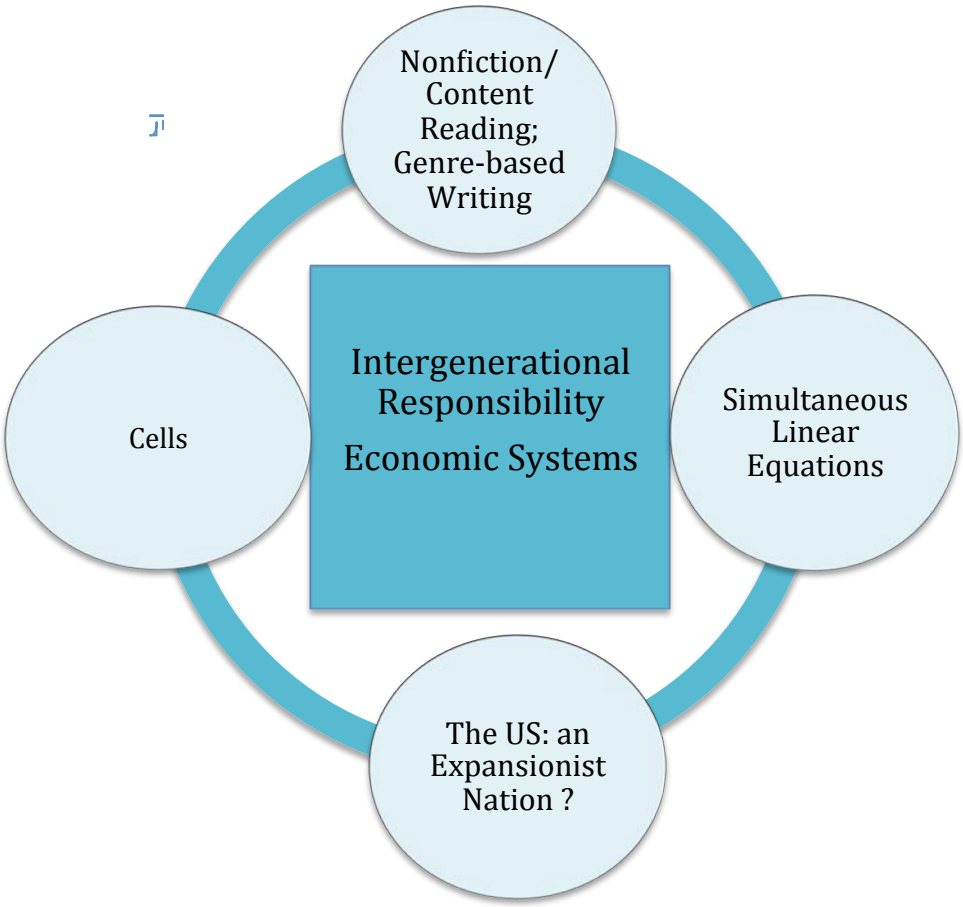
- You will present your planet and speak clearly about all of its components to the class at the end of the week.

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Reading and Literature	RL.8.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
	RL.8.5	Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.
	RL.8.6	Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.
	RL.8.9	Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.
Writing	W.8.1	Write arguments to support claims with clear reasons and relevant evidence
	W.8.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
Math – Expressions and Equations	EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.
	EE.B.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.
Math - Functions	F.A.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
	F.B.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
	F.B.5	Describe qualitatively the functional relationship between two

		quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.
Reading for Science and Technology	RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.
	RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Reading for History	RH.6-8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH.6-8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.6-8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH.6-8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH.6-8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).
	RH.6-8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.6-8.9	Analyze the relationship between a primary and secondary source on the same topic.
Secondary Standards		
New York State		PS.1.1: Day rotation, Year rotation, seasons: tilt of the earth's axis in rotations, phases of the moon, eclipses, tides
		Classification of celestial objects: stars including the sun; planets; comets; moons; and asteroids.
		PS.5.1: Patterns of motion, frame of reference and position, direction, and speed.

	Observe, describe, and compare the effects of balanced and unbalanced forces on the motion of objects. -PS.5.1: Newton's First Law of Motion: Inertia -PS.5.2: gravity
Next Generation	MS.ESS2 Earth's Systems

UNIT:	Grade 8 – Unit 4
DATES:	January 3 – March 18



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 4 focuses more on the United States and its responsibilities as a global actor than the previous units. At the same time, there is an increasing emphasis on having a plurality of perspectives. By understanding the United States' perspective, students can better understand other global perspectives. The English and Language arts unit is intended to give students an idea of how diverse fiction writing is and help them see that people in all times and places are still people. Math and science units grow more complex here as well, as adaptability is a necessary component of resource distribution and assigning roles (in a cell, for example) so that all actors perform their parts to the best of their abilities.

SUSTAINABILITY INTEGRATION	
1.1	*Intergenerational Responsibility*
	Sub-standard and Concepts ▪ **Responsibility to Future Generations** – Students analyze and list their roles and responsibilities in their family, their school, and their community -- now and into the future. They demonstrate understanding of the cultural context of

	intergenerational responsibility (i.e. how some cultures consider and plan for seven generations into the future, etc) **Essential Questions** o How does a nation balance its current needs with its own future needs and the future needs of the world? What do we owe to people to the people who come after us? Are future generations entitled to the same quality of life as us, better, worse? **Activity/Lesson Idea** ▪ Lesson - Research one of the cultures that plans for seven generations into the future. Write an response on how those cultures differ from U.S. culture. What are the differences in resource use? What are the differences in social relationships? Do you think that planning that far in advance is a good idea? Do you think that could be incorporated into our society? What would be the challenges in doing that? Would the benefits outweigh the costs? Answer these questions after your research and be sure to make an argument about your position.
2.3	*Economic Systems*
	Sub-standard and Concepts ▪ **Multiple Perspectives** – Students consider an issue or challenge related to sustainability, through a variety of lenses or perspectives and they explain how approaching that issue or challenge from different perspectives may result in different decisions and outcomes. **Essential Questions** o From the US perspective, what responsibility do we have to other countries? From other countries' perspectives, does the US have a responsibility to help them? **Activity/Lesson Idea** ▪ Lesson – Choose a relevant a sustainability issue that has debatable perspectives, and examine it from two perspectives. Your perspective may be one of them, but be sure to choose the opposite perspective from yours as the other perspective. Weigh the pros and cons of each side of the sustainability issue. What did you learn from this exercise? Did you gain any sympathy for the other perspective. **Sub-standard and Concept** ▪ **Resource Distribution** – Students compare the distribution of a common resource (e.g. money, food) of different groups of people in their own community, region, nation, or world and explain how this resource distribution affects sustainability. **Essential Questions** o How does a country distribute its resources? How does a cell distribute its resources? How are they similar or different?

	Activity/Lesson Idea ▪ Lesson – See below meaningful project idea – mini version **Sub-standard and Concepts** ▪ **Quality of Life Indicators** – Students define indicators that contribute to their own and their community's quality of life and assess their and their community's quality of life based on these indicators. **Essential Questions** o What are some quality of life indicators? What about negative quality of life indicators? How might quality of life indicators be different in different parts of the world or different times in American history? **Activity Lesson/Idea** ▪ Lesson – Create a Venn diagram of quality of life indicators. Which indicators overlap? Which do not overlap? Consider what the U.S. thinks of as a high quality of life, and what other countries think of as a high quality of life. Does happiness come into the picture? How can you measure happiness?

DAILY PLAN/TIME MANAGEMENT					
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

MEANINGFUL PROJECT
Draw the US as a cellular system. Part 1: Create your own cell. It can be made out of whatever you would like, and do not be afraid to get creative. Hollowing out a (safe) object would be a good start. Part 2: Label the parts of the cell and their functions. These parts of the cell can be compared to the parts of a nation, for example, mitochondria produce energy and cell walls provide protection. What produces energy and protection for our country? Be imaginative, but specific and direct in your analogies between an actual cell and a nation's resources. Make sure all components of an actual cell are included in your cell. The following are some questions to think about when creating your very own cell: What does the cell need to function? Can you compare the cell that you made to the earth as an interconnected system? Are there parts of the cell that would not work without other parts? Part 3: Present your cell to the class, making sure to draw the comparisons between a regular

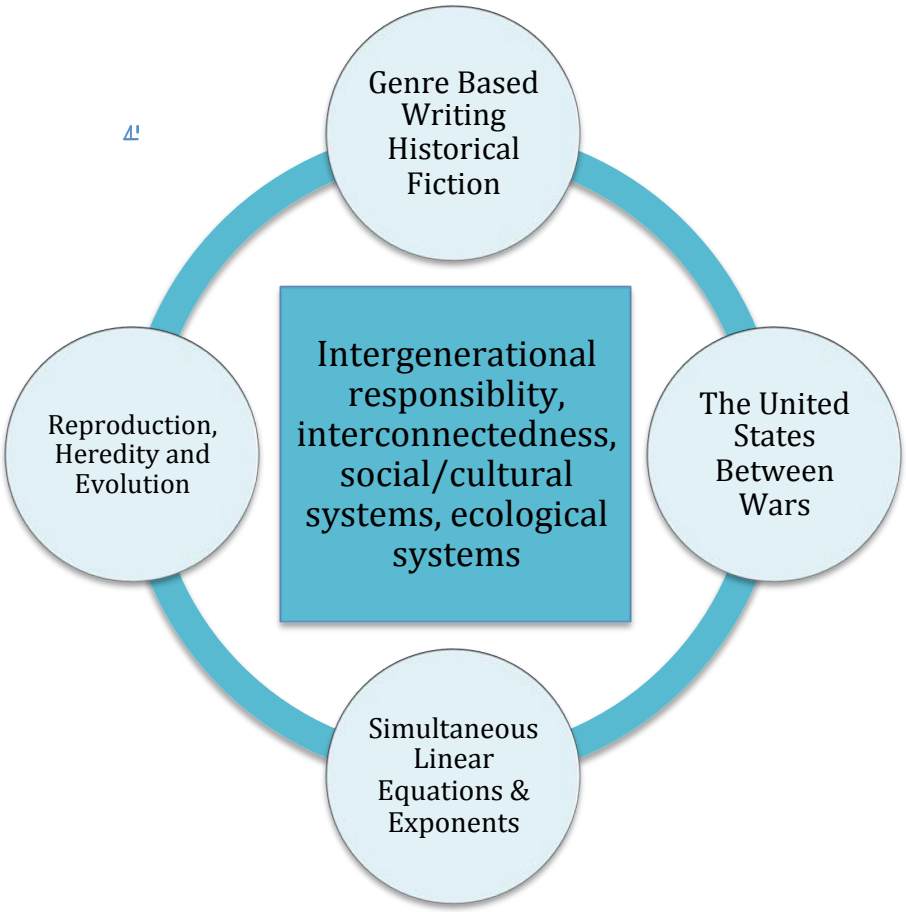
cell in a body, and the United States as a similar entity. What are the similarities between a cell and the United States? Be clear in your presentation of your cell. Don't be afraid to suggest something different from your classmates in your comparisons.

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Reading – Informational Text	RI.8.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
	RI.8.2	Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.
	RI.8.3	Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).
	RI.8.6	Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.
Reading - Literature	RL.8.6	Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.
Writing	W.8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
	W.8.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.
Math – Expressions& Equations	8.EE.C.8	Analyze and solve pairs of simultaneous linear equations.
Reading – Science & Technology	RST.8.1	Cite specific textual evidence to support analysis of science and technical texts.
	RST.8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
	RST.8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST.8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.
	RST.8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

	RST.8.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
	RST.8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST.8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Reading - History	RH.8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH.8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH.8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH.8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).
	RH.8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.8.9	Analyze the relationship between a primary and secondary source on the same topic.

Secondary Standards		
New York State	LE2.1	
Next Generation	MS. LS3	
	MS.LS4	

UNIT:	Grade 8 – Unit 5
DATES:	March 12 – April 15



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 5 examines interconnectedness and its inevitable link to diversity; while the historical aspects of this unit narrow their scope with regards to the United States, the scientific angle stresses something that has up until now not been covered: heredity. Unit 5 asks the question of what one generation will pass on to the next and how the actions of one individual can impact the entire community. The English section emphasizes fiction over nonfiction to convey how culturally important stories are drawn from the myths and legends that came before. By learning about why life in their own time and country is the way it is, students learn how to make life better for the next generation. More than anything, this unit is about responsibility.

SUSTAINABILITY INTEGRATION	
1.1	*Intergenerational Responsibility*
	Sub-standard and Concepts • **Responsibility to Future Generations** - Students analyze and list their roles and responsibilities in their family, their school, and their community -- now

	and into the future. They demonstrate understanding of the cultural context of intergenerational responsibility (i.e. how some cultures consider and plan for seven generations into the future, etc) **Essential Questions** o Heredity - What traits do you think you got from your parents? What traits do you like about your self that you would like to pass on? What responsibility do we have to maintain our society, economy and infrastructure for future generations? **Lesson/Activity Idea** ▪ Lesson – Create a Venn Diagram that shows what traits you have that overlap with your parents/siblings/relatives, and which are unique to you and your parents/siblings/relatives. Then, write an essay explaining how you evolved to be where you are due to evolution. Do you think your ancestors feel responsible to reserve some resources for their future grandchildren and great grandchildren? Why or why not? If not, what has changed that makes us and our parents concerned about future generations? Elaborate on your thoughts in as much detail as possible, describing current responsibilities compared to past.
1.2	*Interconnectedness*
	Sub-standard and Concepts • **Systems** - Students describe the ecological, economic, political, and social systems in their community and can identify leverage points in the system to improve their community **Essential Questions** o What were some of the different political systems in the wan (communism, socialism?) Why do these differences lead to conflict? Do any of these political systems have positive traits? How can collaboration and communication between people/groups who have differences improve their relationships? Does it improve the strengths of a system to have differences **Lesson/Activity Idea** ▪ Lesson – Create a drawing of a political system that you think would be ideal. Where do people live? How do people live? How often do they vote for leaders? How do they communicate to their leaders, and how are their voices heard and incorporated into policies? The drawing should be detailed and creative – do not be afraid to propose something out of the ordinary!
2.4	*Social and Cultural Systems*
	Sub-standard and Concepts • **Multiple Perspectives** - Students consider an issue or challenge related to

sustainability, through a variety of lenses or perspectives and they explain how approaching that issue or challenge from different perspectives may result in different decisions and outcomes.

Essential Questions

- How did the U.S. government respond to economic changes? How were individuals affected by economic changes, and how did they respond? How do you think countries felt about U.S. assuming global responsibilities? Is it the place of a nation like the U.S. to assume these responsibilities?

Lesson/Activity Idea

- Lesson – Choose a partner. Each take a stance of another country of your choice. Answer the following questions and present it to your partner, and hand in your response to the teacher after class. What were the economic effects on them after WW1 and in WW2? What was their position in WW2? Do you believe that, from your country's perspective, it was the right thing to do? Do you believe that the U.S. should have assumed certain responsibilities? You may do some research on the Internet for this project – share the computer equally with your partner.

Sub-standard and Concepts

- **Citizenship** - Students explore a range of opportunities for civic engagement, including informed voting, grassroots activism, volunteerism, lobbying, involvement in non-governmental organizations, and working in government.

Essential Questions

- What is your personal civic responsibility to the U.S.? What is your civic responsibility during a war? How do you support your country during a war? Even if you do not agree with the war, what are your best options for how to react as a U.S. citizen? How can you help influence decision-making in the U.S.? Could you have influenced the decision to go into WW2?

Lesson/Activity Idea

- Lesson – Choose an issue that you care about, or that affects you, your family, or your friends. If you were to create a campaign to lobby a politician for this issue, what would you do? What positions would you take and what argument would you make to persuade the politician to make the choice you want him/her to make? Plan out your exact strategy – for example – would you make an appointment and talk to him/her down in a meeting? Would you stop him/her on the street to make

	your actions more public? Write a letter to your local representative voicing this issue and your opinion about it. If different people have the same issue in mind, combine your plans and enact them! Teacher can help you get in contact with the politician **Sub-standard and Concepts** • **Quality of Life Indicators**- Students define indicators that contribute to their own and their community's quality of life and assess their and their community's quality of life based on these indicators. **Essential Questions** o What is the birth rate, death rate and infant mortality rate of the U.S.? How can we use these as quality of life indicators? How are these numbers affected by environmental change, and will that affect quality of life? **Lesson/Activity Idea** ▪ Lesson – Split into groups and research a country. Print a graph showing their population growth over time. Assess the people's Quality of Life in this country based on the indicators we talked about in class.
2.2	*Ecological Systems*
	Sub-standard and Concepts • **Natural Resources** (renewable & non-renewable) – Students investigate the natural systems in their local region and explore how humans have impacted those systems, both positively and negatively. Examples: They identify natural and agricultural resources and where they come from (e.g.: wildlife, fish, plant, rock, water, soil, minerals, sunlight, and air). Students distinguish between natural resources and things made by humans (e.g., sand vs. cement, milk vs. ice cream, wheat vs. bread, sap vs. syrup, wildlife versus domesticated animals). Students describe a resource that will regenerate in their lifetime and identify resources that are finite. **Essential Questions** o What is the birth rate, death rate and infant mortality rate of the U.S.? How can we use these as quality of life indicators? How are these numbers affected by environmental change, and will that affect quality of life? **Lesson/Activity Idea** ▪ Lesson – Students break into groups to discuss how natural resources affect their lives. What resources do they use every day? What resources could they not live without? Is it fair that we believe that we could not live without electricity, when some communities live without water? What is an equitable

		distribution of resources? Students will discuss this and prepare a presentation on what each students initially believed and felt before the discussion, and what they learned from their peers, and if what they learned changed what they believe or feel now.

DAILY PLAN/TIME MANAGEMENT					
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

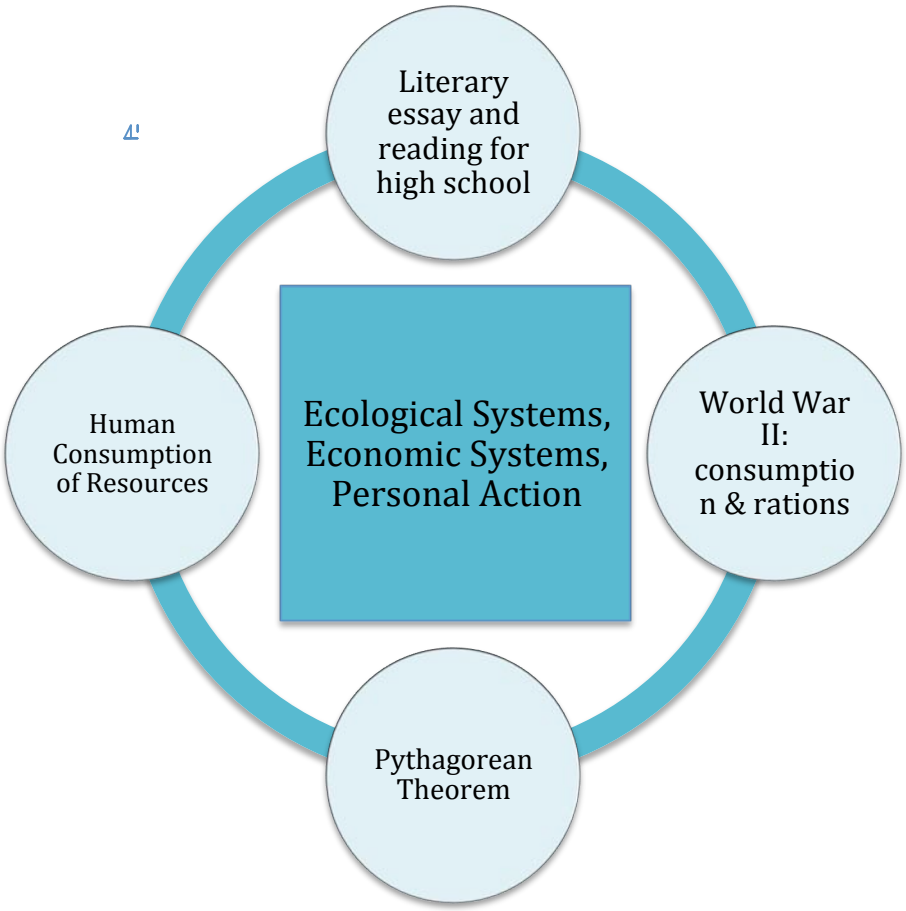
MEANINGFUL PROJECT
Teacher will choose a book that applies to the U.S. Between Wars. First provide a summary. Then, insert an environmental change in your book that would create an alternative ending (e.g. resource change, population growth). Write an alternative ending. Draw a diagram of the story (including the climax) as it was and then as you changed it.

CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Reading Literature	RL.8.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
	RL.8.6	Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.
	RL.8.9	Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.
Writing	W.8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
	W.8.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.
Math – Expressions and Equations	8.EE.C.8	Analyze and solve pairs of simultaneous linear equations.

Literacy – Reading for Science and Technology	RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
	RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
	RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.
	RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
Literacy – Reading History	RH.8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH.8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH.8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH.8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH.8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).
	RH.8.7	Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
	RH.8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH.8.9	Analyze the relationship between a primary and secondary source on the same topic.

Secondary Standards		
New York State		
Next Generation	MS.LS3	
	LE2.1	
	LE4.1	
	LE4.3	

UNIT:	Grade 8 – Unit 6
DATES:	May 2 – June 10



PARAGRAPH EXPLANATION OF INTEGRATION
Unit 6 centers around a recurrent historical theme for the year: the United States' responsibility to the rest of the world. The final unit of the year brings that to a conclusion with a study in one of the most dynamic chapters in our nation's history. While the early units gave students the tools they needed to understand geometry, this unit teaches them about the Pythagorean Theorem, one of the fundamental precepts in mathematics. Scientifically, students learn about what humans can and should do in the name of survival. In English, they prepare for the sort of focused analysis that they will have to do in high school. By this time, they should be able to form conclusions and back them up with evidence, regardless of the subject.

SUSTAINABILITY INTEGRATION	
2.2	*Ecological Systems*
	Sub-standard and Concepts • **Natural Resources** (renewable & non-renewable) – Students investigate the natural systems in their local region and explore how humans have impacted

	those systems, both positively and negatively. Examples: They identify natural and agricultural resources and where they come from (e.g.: wildlife, fish, plant, rock, water, soil, minerals, sunlight, and air). Students distinguish between natural resources and things made by humans (e.g., sand vs. cement, milk vs. ice cream, wheat vs. bread, sap vs. syrup, wildlife versus domesticated animals). Students describe a resource that will regenerate in their lifetime and identify resources that are finite. **Essential Questions** o How did resource shortage during and after WW2 affect human consumption? How has consumption changed between WW2? How will it be different in another 60 years? How did land use change increase the use of natural resources? Why did rationing happen? **Activity/Lesson Idea** ▪ Lesson – Imagine you are a leader during a future time when there is rationing of gas for your car, and prices of many items (such as metro cards etc) are going up. What would you do to educate the public on resources conservation and the finite nature of a resource like gas? How would you suggest they cut down on their consumption? Create a speech that is both positive and inspiring but also educated the public on the dire situation. Consider all types of people, both rich and poor and young and old, and how they will respond to your speech. Hand in the speech at the end of class, and the teacher will choose a few to be read aloud at the next class. Those chosen will get a surprise!
2.3	*Economic Systems*
	Sub-standard and Concepts • **Energy Economics** - Students survey their own household energy uses, explore opportunities for increased energy efficiency and conservation, and then calculate potential savings over time. **Essential Questions** o What is your personal energy use like? What does it look like compared to the rest of the class? What are the effects of excessive energy use? What can you do to reduce your energy consumption? **Activity/Lesson Idea** ▪ Lesson – Imagine it what it would be like if you had to pay each time you plugged something into an outlet. Would you use less if it got more costly to use energy (per use)? How many times a day would you use an outlet if it cost $0.10 per use? $0.50? $2.00? $5.00? Write down your number of times for each price, and compare with your neighbor. Discuss why you chose that number of times.

	Sub-standard and Concepts • **Food Systems** - Students analyze local, national and global food systems, demonstrating an understanding of the differences between industrial farming, factory farming, family farming, organic, and non-organic farming. They study the history of, and debates over, the U.S. Farm Bill, and related concepts including protectionism, free trade, and fair trade in the context of food. **Essential Questions** o What are the differences between industrial farming, factory farming, organic farming, family farming and non-organic farming? Which method do you believe is best for the environment? Which method is least expensive? Which method do you believe is the best outcome for the most number of people/organisms? What system appears most ethical to you? **Activity/Lesson Idea** • Taken From http://chge.med.harvard.edu/sites/default/files/lesson-plan-files/lesson_4.pdf. "One way to improve students' understanding of the two-way causality and the push and pull in a food supply chain might be to have student act out the food supply chain. Students representing the consumers could pull on a table (which represents the food to be moved) while students representing the farmers and processors could push the table along; this would represent the process of consumers demanding or pulling for food and farmers/processors pushing food. As another scenario, students representing the consumers could just hold onto the table (neither pulling nor pushing) while students representing the farmers and processors could push the table. As a third scenario, students representing the consumers could push against the table while students representing the farmers and processors could push the table. This situation would represent the consumers resisting or boycotting a particular food product and the farmers/processors pushing strongly but failing to push or sell their food." This would help build understand of the food supply chain.
3.1	*Personal Action*
	Sub-standard and Concepts • **Personal Responsibility** - Students know the difference between actions that they can take themselves and those that require the involvement of other people, organizations, and government. They identify and carry out a personal action that will enhance quality of life in environmental, social/cultural, or economic sectors.

Essential Questions

- What is our personal responsibility when it comes to consumption? How does your consumption affect environmental, social/cultural, and economic sectors? What things would you consider consuming less of? What things do you think you deserve more of?

Activity/Lesson Idea

- Lesson – Answer these questions with a group. Have one group member share the thoughts from their group discussions with the class. Alternatively, have students reflect on these questions in the form of an essay or other creative expression.

Sub-standard and Concepts

- **Project Planning -** Students create a flow chart, timeline, or some other type of graphic organizer to identity these components of a poster and action project: issue/topic, resources, research, poster mock-up, final poster assembly, poster presentation, and action or service towards a solution.

Essential Questions

- How can we use graphic organizers to represent a large amount of historical information in a brief way? What do you think are the high points of each decade from WWII to now?

Activity/Lesson Idea

- Lesson- See meaningful project for standard application.

DAILY PLAN/TIME MANAGEMENT					
	1 *list essential questions to be covered each day for each subject*	2	3	4	5
	6	7	8	9	10

MEANINGFUL PROJECT
Use either a computer or physical materials to make an interactive timeline from 1945 through to World War 2. Part 1: Choose your medium. Think outside of the box in terms of the materials or "hands-on" components of your timeline. This should not simply be a posterboard with a horizontal line. It should include some creative or interactive component. You can add links to your timeline that link to pictures or videos, or you can make it a 3D timeline if you would like. Part 2: Create your timeline. Make sure to touch on all of the important events that we talked about throughout social studies class. It is also important to tie how social and cultural systems

changed over time. What happened to the change in human consumption over time?
Part 3: You will present your timeline in class to the students. Make sure there are enough of the interactive materials to go around. Other students should be interacting with your timeline – this will make it fun!

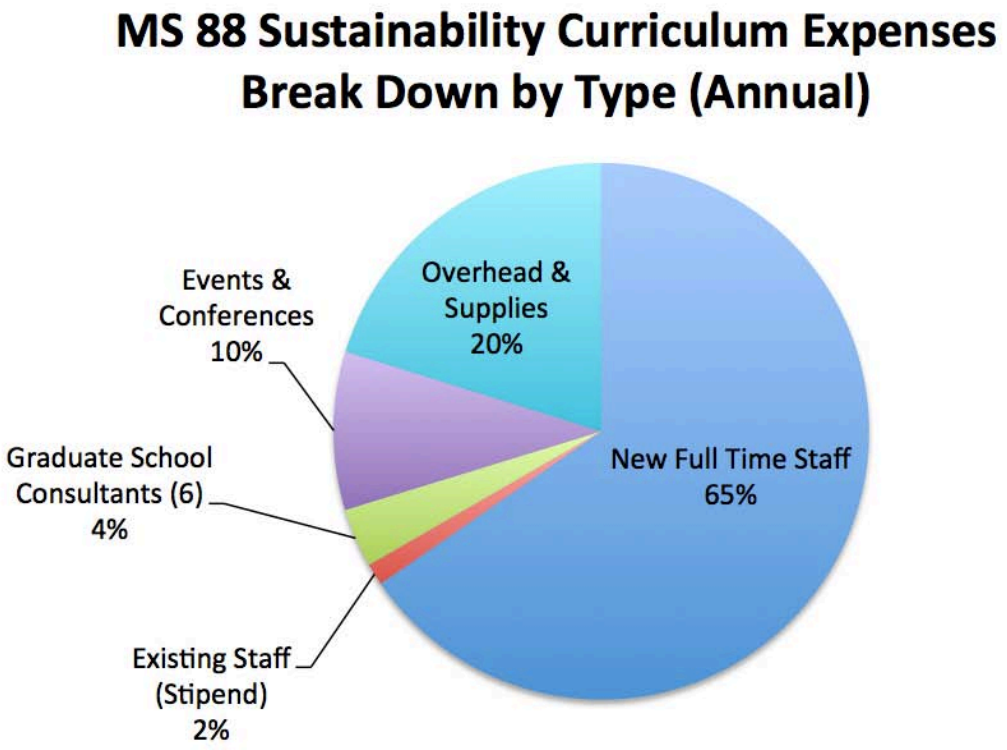
CURRICULUM STANDARDS ADDRESSED		
Primary Standards		
Common Core		
Literacy (Reading)	SL 8.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
	RL 8.10	By the end of the year, read and comprehend literature, including stories, dramas, and poems, at the high end of grades 6–8 text complexity band independently and proficiently.
Literacy (Writing)	W 8.7	Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
	W 8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
	W 8.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
	W 8.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
Math	G 8.6	Explain a proof of the Pythagorean Theorem and its converse.
	G 8.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
	G 8.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
Science	RST 6-8.1	Cite specific textual evidence to support analysis of science and technical texts.

	RST 6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
	RST 6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST 6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.
	RST 6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
	RST 6-8.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
	RST 6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
	RST 6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST 6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Social Studies	RH6-8.1	Cite specific textual evidence to support analysis of primary and secondary sources.
	RH 6-8.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
	RH 6-8.3	Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
	RH 6-8.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
	RH 6-8.5	Describe how a text presents information (e.g., sequentially, comparatively, causally).
	RH 6-8.8	Distinguish among fact, opinion, and reasoned judgment in a text.
	RH 6-8.9	Analyze the relationship between a primary and secondary source on the same topic.

APPENDIX VI: BUDGET AND EXPENSES

Budget for Sustainability Curriculum - MS 88			
	Expense	**Positions**	**Estimated Annual Costs**
LEADERSHIP			
New Full Time Staff**	Sustainability Manager	1	$80,500
	Academic Specialist	1	$57,500
	Partnership Coordinator	1	$57,500
	Research Assistant	1	$51,750
Existing Staff	Stipend for initial work by existing staff	---	$5,000
Graduate Team of Consultants*	Education and/or Environmental Science & Policy Graduate Students	6	$13,455
Total Leadership Costs			*$265,705*
EVENTS & CONFERENCES			
	Initial Conference of Professionals	20	$7,000
	Out-of-Collaboration Sessions	---	$20,000
	Final Retreat of Professionals	20	$7,000
	Class Field Trips & Excursions	---	$2,100
Total Events & Conferences Costs			*$36,100*
OVERHEAD & SUPPLIES			
	Supplies	---	$3,000
	Library Books	---	$2,682
	Textbooks	---	$34,271
	Educational Software	---	$36,412
Total Overhead & Supplies Costs			*$76,365*
Total Annual Costs Related to the Sustainability Program			**$378,170**

Annual Expenses for Sustainability Curriculum at MS 88



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