2015 IMPACT II

Curriculum

“Commitment to Quality Education for All”
The purpose of IMPACT II is to spread excellent teaching ideas throughout Ventura County.

IMPACT II does this by partnering with local businesses and organizations to provide $500 individual and $750 team grants to educators for unique, original and innovative curriculum that has been classroom tested.

IMPACT II enables excellent teaching ideas to reach all teachers in the county, and raises community awareness of exemplary classroom practices. IMPACT II boosts teacher morale by recognizing innovative teaching through both grants and an annual awards dinner where we celebrate the true heroes and heroines in our communities.

Over the years Ventura County IMPACT II has matured into the program that we envisioned at its inception in 1993. Business leaders, teachers, and administrators are becoming aware of the program and are participating in unprecedented numbers.

The Ventura County IMPACT II program is a partnership between the Ventura County Office of Education and several Community Sponsors.

IMPACT II puts cutting edge classroom projects into the mainstream, turning students on to learning.

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# Table of Contents

<table>
<thead>
<tr>
<th>Project:</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Looking Closer to Home</td>
<td>1</td>
</tr>
<tr>
<td>Insect Expedition: World of Bugs</td>
<td>22</td>
</tr>
<tr>
<td>Mousetraps in Motion: Real World Physics made Fun</td>
<td>33</td>
</tr>
<tr>
<td>Don't be Afraid to Reinvent the Wheel</td>
<td>42</td>
</tr>
<tr>
<td>&quot;Old School&quot; meets &quot;New School&quot;</td>
<td>46</td>
</tr>
<tr>
<td>Passion Project</td>
<td>50</td>
</tr>
<tr>
<td>Journey to Find the Artist Within</td>
<td>95</td>
</tr>
<tr>
<td>The Amazing Race</td>
<td>115</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recipient(s):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Christa Lamb &amp; Kari White</td>
<td></td>
</tr>
<tr>
<td>Beth McGrath &amp; Robin Paul</td>
<td></td>
</tr>
<tr>
<td>Robin Paul</td>
<td></td>
</tr>
<tr>
<td>Debbie Maulhardt</td>
<td></td>
</tr>
<tr>
<td>Barbara Aanerud &amp; Debbie Maulhardt</td>
<td></td>
</tr>
<tr>
<td>Bethany Ellis &amp; Ashley Johnson</td>
<td></td>
</tr>
<tr>
<td>Martin Cook, Terri Hooson &amp; Jessica Murphy</td>
<td></td>
</tr>
<tr>
<td>Shelly Ballmer &amp; Karen Mercer</td>
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</table>

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<thead>
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<td>Conejo Valley Unified School District</td>
<td></td>
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<tr>
<td>Las Virgenes Unified School District</td>
<td></td>
</tr>
<tr>
<td>Oxnard Elementary School District</td>
<td></td>
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<tr>
<td>Ventura Charter School</td>
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<td>Colina Middle School</td>
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<td>LCMS</td>
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<tr>
<td>R. J. Frank Intermediate</td>
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<td>Ventura Charter</td>
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<tr>
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<td>Sage Corwin Publications</td>
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Project: The PhD Project
Recipient(s): Shelly Ballmer
District: Ventura Charter School
School: Ventura Charter School
Business Partner: Sage Corwin Publications

Project: Building For a Promising Future
Recipient(s): Amanda Lynch-Thorpe
District: Ventura Unified School District
School: DATA Middle School
Business Partner: Blois Construction Inc.

Project: Stored Energy and Cellular Respiration
Recipient(s): Nancy Escamilla
District: Ventura Unified School District
School: E.P. Foster School STEM Academy
Business Partner: Amgen Foundation

Project: It's Alive...And A Teaching Tool!
Recipient(s): Maria Geib
District: Ventura Unified School District
School: Junipero Serra
Business Partner: Amgen Foundation

Project: Weather or Not, Kinders Can Be Engineers
Recipient(s): Julie Blevins & Lisa MacLeod
District: Ventura Unified School District
School: Mound School
Business Partner: Amgen Foundation

Project: 4th Grade Survivor
Recipient(s): Suzanne Brenner, Holly Green & Barbara Nelles
District: Ventura Unified School District
School: Mound School
Business Partner: Amgen Foundation

Project: Elder Buddy and the Aging Brain
Recipient(s): Kathy Elliott & Beth Borer
District: Ventura Unified School District
School: Pacific High School
Business Partner: Amgen Foundation
Socratic seminar, various nonfiction and fiction documents, engaging topical video clips, collaborative groups, artistic representations, and debates are all part of Looking Closer to Home, a three-week, grade six and above unit targeting Common Core Reading Standards for Literature. In the course of this retrospective unit, students engage in a close analysis of the foundation of their home, both literally and figuratively.

Guiding Questions

- How do you define home?
- How does your home reflect and help to define you?
- What would you do to protect your home and family?

The Unit: Stage 1

The unit begins by engaging students through emotional video clips presenting different criteria for home, family and community. The students compare and contrast the videos by way of note-taking on a Venn Diagram leading them to small group discussions where they define each of the terms. The students continue to analyze these terms as they complete a close reading and annotation of the poem “I Am From” by Lorian Dahkai.

The following day the students continue to develop their reading skills by analyzing and assessing the definitions as they are reflected in two vignettes by Sandra Cisneros, “The House On Mango Street” and “A House of My Own.” Students now apply the concepts learned by interpreting the narrator’s definition of home, family and community as they revise and create a new “I Am From” poem from the narrator’s point of view. In order to demonstrate their understanding of what makes a home, students create an artistic representation of home through a collage of images.

The unit continues to challenge students by completing a close reading of three songs: “Anna Sun” by Walk the Moon, “A House Is Not A Home” by Glee, and “The House That Built Me” by Miranda Lambert. The students support their claims by citing textual evidence during a Socratic Seminar. Next, the students participate in a discussion scramble where they analyze and assess the claims and evidence of “This I Believe” essays. Within their groups they pull out the claim and supporting evidence thereby establishing a thesis statement. The groups are jigsawed to present the findings of their groups. The following day, the students complete an in-class “This I Believe” argument essay.

Through the use of google docs, students will complete peer editing. This stage concludes with selected essays presented through a gallery walk, reader’s theater or tableaux.
Stage 2

Now that students have fully developed an understanding of home, family and community, they are challenged to investigate the extent that one might go to in order to protect that home. Students will evaluate how the characters in The Butter Battle Book by Dr. Seuss respond to these challenges by way of a second Socratic Seminar. Further examination continues with class discussion and close reading of “The Highwayman” by Alfred Noyes and “Annabelle Lee” by Edgar Allan Poe. Did the choices of the characters meet with success? Were their motives selfish, or selfless?

The unit concludes with a reading of “The Fall of the House of Poe” by Mara Rockliff. The piece examines the fate of one of Poe’s homes as it faces the possibility of being torn down to make way for progress at New York University. The students analyze the arguments on both sides and present them in a class debate.

The unit promotes self-expression and the use of higher order thinking skills as students are identifying, defining, analyzing and interpreting various types of documents like poems, songs, vignettes, short stories and articles. The unit addresses the needs of all learners by tapping into creative thinking as well as objective analysis of information. We are able to measure the success of the unit via discussion, tests, completed projects, and essays.

All in all, this unit is instructional, relevant, student-centered, and one we will continue to use. The unit contains a number of best practices; once taught, they can be applied to other units. Looking Closer to Home helps to ground students and gives them a strong sense of belonging. We feel an overwhelming need to do this unit since our students are at an age where they are discovering who they are- their values, their dreams, their aspirations.

In addition to the focus on Common Core Reading Standards for Literature, the unit also includes the following standards:

- Reading Standards for Informational Text 1-6 & 8-9
- Writing Standards 1-9
- Speaking and Listening Standards 1-5
- Language Standards 1-6
I Am From

Lorian Dahkai

I am from red man and white man and brown man
I am from farmer and miner
I am from hardship and surviving
I am from love at first sight
I am from attraction and youth
I am from salvation
I am from Sunday school and Baptist hymns
I am from higher education
I am from a teacher, a minister and nurse
I am from dirt roads and cattle guards
I am from giant cotton wood trees
I am from 2.5 kids a dog and picket fence
I am from Norman Rockwell
I am from the desert and the mountains
I am from camping and Disney
I am from Nintendo and rabbit ear antennas
I am from rebellion
I am from ripping and tearing
I am from heartache and death
I am from confusion.
I am from new birth
I am from adventure across the seven seas
I am from discipline, endurance and challenge
I am from One Nation Under God
I am from second and third chances
I am from Christian love
I am from a first kiss
I am from promises to love honor and cherish
I am from new life
I am from a hour ago
I am from a minute ago
I am from a second ago
I am now
I Am From
By: alex Rambadt

I am from Mango Street

I am from desperate times and depression

I am from embarrassment

I am from Loomis, Keder, and Paulina

I am from many different homes

I am from a unsuccessful and fruitless effort family

I am from many different hopes and dreams

I am from a home of wooden bars nailed on windows and paint peeling

I am from an undesided settlement

I am from a non-real house

I am from a home where everyone must share a bedroom

I am from dissapointment and despair
I Am From
By: Vera Zhang as Esperanza

- I am from desperate times
- I am from hope
- I am from dreams
- I am from embarrassment
- I am from a spirited family
- I am from fruitless efforts
- I am from a paradox of undecided settlement
- I am from lies and illusions
- I am from a mirage of wishes
- I am from despairing shadows
- I am from light and love
- I am from overbrimming love
I Am From
By: Elle Taylor as Esperanza

I am from never ending journeys.
I am from Mango street.
I am from many doubts.
I am from Catholic school.
I am from lost hopes.
I am from disappointment.
I am from temporary.
I am from peace.
I am from stories.
I am from two shoes.
I am from pretty purple petunias.
I am from quiet as snow.
I am home.
I Am From

By: Beatriz Flores

I am from a family of six
I am from Mango street
I am from a small red house with crumbling bricks
I am from an old one roomed home with six people
I am from ordinary hallway stairs
I am from paint peeling, boarded windows
I am from temporary street addresses
I am from porches and pillows
I am from pretty purple petunias
I am from quiet as snow and clean as paper
I am from close quarters
I am from a house of my own
I am home
Anticipatory Video Introduction

Orphans 3:00 https://www.youtube.com/watch?v=sLz6B-gkm_4

Thai Commercial 3:05 http://www.youtube.com/watch?v=cZGghmwUcbQ


Directions

The class will watch three video clips about family, community and home. During the clips, pay attention to what the clips suggest about these three categories: HOME, FAMILY and COMMUNITY. Following the videos, you will work with your groups to complete the following chart. Define each of the following words with words, phrases or small graphics. In areas where the circles overlap, include words, phrases and graphics that the terms share in common.
Reading Guide: A Tool for Seminar Preparation

Seminar: Fiction
Reading: “Anna Sun” by Walk the Moon, “A House Is Not A Home” from Glee and “The House That Built Me” by Miranda Lambert

Pre-Seminar activities:

1. What lines in the lyrics did you find most important or significant? (Use bullets)
   “Anna Sun”
   ____________________________________________________________________
________________________________________________________________________
________________________________________________________________________

   “A House Is Not A Home”
   ____________________________________________________________________
________________________________________________________________________
________________________________________________________________________

   “The House That Built Me”
   ____________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. What do you think Walk the Moon means when they say, “We got no money, but we got heart/We’re gonna rattle this ghost town/This house is falling apart”?  
   ____________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. What do you think the lyrics from “A House Is Not A House” mean when they say, “A chair is still a chair, even when there’s no one sitting there/But a chair is not a house, and a house is not a home”?  
   ____________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. According to “The House That Built Me,” how did Lambert’s house build her?  
   ____________________________________________________________________
________________________________________________________________________
________________________________________________________________________
5. What tough/difficult questions do the lyrics ask? What do these questions make you wonder?

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________


______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

7. Write a single sentence that states the central message (theme) of each text.

“Anna Sun”______________________________________________________________
_________________________________________________________________________
______________________________________________________________________________

“A House Is Not A Home”____________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

“The House That Built Me”__________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
# This I Believe Rubric
## Teacher Evaluation

<table>
<thead>
<tr>
<th>Name:</th>
<th><strong>Beginning</strong></th>
<th><strong>Developing</strong></th>
<th><strong>Accomplished</strong></th>
<th><strong>Exemplary</strong></th>
<th><strong>Score</strong></th>
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</thead>
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<tr>
<td><strong>Organization</strong></td>
<td>1</td>
<td>2</td>
<td></td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>Opening Paragraph</strong></td>
<td>No attempt at using a quote; missing twist and thesis.</td>
<td>OP doesn't begin with a quote; twist and thesis included.</td>
<td>Good use of quote with twist and thesis.</td>
<td>Insightful quote used with twist and thesis.</td>
<td></td>
</tr>
<tr>
<td><strong>Body Paragraphs</strong></td>
<td>Does not follow format; missing TS</td>
<td>Strays from format some; needs stronger TS</td>
<td>Follows format; good flow and TS</td>
<td>Weaves format effectively; strong TS</td>
<td></td>
</tr>
<tr>
<td><strong>Evidence CD</strong></td>
<td>Minimal or irrelevant evidence to support claim</td>
<td>Repetitive evidence used to support claim</td>
<td>Good use of evidence to support claim</td>
<td>Unique evidence supports claim</td>
<td></td>
</tr>
<tr>
<td><strong>Elaboration CM</strong></td>
<td>Minimal elaboration</td>
<td>Weak or uneven elaboration</td>
<td>Good elaboration</td>
<td>Effective and various elaboration techniques</td>
<td></td>
</tr>
<tr>
<td><strong>Transitions</strong></td>
<td>Few or no transitions evident</td>
<td>Inconsistent use of transitions; little variety</td>
<td>Adequate use of transitions with some variety</td>
<td>Consistent use of transitions; variety</td>
<td></td>
</tr>
<tr>
<td><strong>Closing Paragraph</strong></td>
<td>No attempt at linking OP with quote; missing twist/thesis</td>
<td>CP does not link to OP with a quote; thesis and twist included.</td>
<td>Good link to quote with thesis and twist</td>
<td>Excellent link with thesis and twist</td>
<td></td>
</tr>
<tr>
<td><strong>Clauses and Phrases</strong></td>
<td>No dependent clauses used</td>
<td>Repetitive dependent clauses used with punctuation errors</td>
<td>Dependent clauses are used; missing commas</td>
<td>Dependent clauses are used effectively</td>
<td></td>
</tr>
<tr>
<td><strong>Written Expression</strong></td>
<td>Weak vocab; no variety in sentence structure.</td>
<td>Good vocab, some variety in sentence structure.</td>
<td>Strong vocab, sentence structure.</td>
<td>Thoughtful vocab, sentence structure.</td>
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<td><strong>Mechanics</strong></td>
<td>Too mistakes.</td>
<td>Many mistakes.</td>
<td>A few mistakes.</td>
<td>No mistakes.</td>
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<td><strong>Format</strong></td>
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<td>Not all paragraphs formatted properly</td>
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This I Believe Rubric
Peer Evaluation

Name:

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Argument Essay Rubric

1=serious problems 2=developing competence 3=minimal competence 4=clear competence

Introduction: grabs reader’s attention with an interesting question, quote or surprising fact 1 2 3 4

Thesis: well defined, presents specific claim, writer’s point of view and at least two reasons 1 2 3 4

Reasons: clearly described and listed in order of importance 1 2 3 4

Evidence: persuasive evidence that supports each reason or opinion and reflects a consistent point of view 1 2 3 4

Body: body paragraphs thoroughly and persuasively elaborates upon reasons and evidence 1 2 3 4

Transitions: effective transitional words and phrases, parallel structure, and repetition create coherence throughout the essay 1 2 3 4

Conclusion: clearly and freshly restates opinion, concisely summarizes claim 1 2 3 4

Conventions

Standard English spelling, punctuation, and capitalization are used appropriately 1 2 3 4

Standard English grammar and sentence structure (with emphasis on varied sentence beginnings) are used appropriately 1 2 3 4

Uses a variety of clauses and phrases 1 2 3 4

Article title is in quotations, magazine or newspaper title is underlined, author and Titles are capitalized and direct quotes are in quotations 1 2 3 4

Format

Final draft is in ink, written on one side of the page, organized in paragraphs with the proper indentation and name is on the paper 1 2 3 4
Name: ____________________________
Period: _____________

**Reading Guide: A Tool for Seminar Preparation**
Seminar: Fiction
Reading: *The Butter Battle Book*

Pre-Seminar activities:

1. Pick a character. What is the character motivated by? Cite specific lines from the text.

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

2. What does the Wall symbolize?

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

3. What do you notice about Dr. Seuss’ style, word choice and figurative language?

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

4. Write a single sentence that states the central message (theme) of the text.

______________________________________________________________________________
______________________________________________________________________________
Insect Expedition: World of Bugs is an open ended project that is the culminating activity for our study of entomology in sixth grade science. The students select their own topics and work in small teams to create all of the displays and models for our insect museum. The museum is then put on display for parents and community members to visit.

During this process, students learn how to conduct research, how to summarize key ideas, and how to organize and develop a display that is interesting, eye catching, and informative. Creativity as well as teamwork and problem solving are key aspects of this project. Thus, students are part of the learning process rather than simply taking things in as passive learners. The project not only gives students a chance to show what they learned, but also to teach others in their peer group, their family, and the community as a result of their efforts.

The insect museum is very much a cross curricular project. While the topic is science related, the skills that students learn relate to research, writing, and the visual arts. The project allows students to achieve California State sixth grade Science standards 5a, 5b, 5c, and 5d. In addition, the project also encompasses sixth grade Language Arts standards 1.4, 1.5, 1.6, 2.1, 2.3, and 2.4 as well as many of the new Common Core standards related to technology, research, and writing. Visual Arts sixth grade standards 2.1, 2.2, 2.3, 2.4, and 2.5 are also part of the students’ experience as students learn paper engineering to make their displays interactive, the process for making a mixed media three-dimensional model, and how to design and select a color scheme for their display boards.

The entomology unit was teacher developed in order to provide an experience that was different from traditional textbook instruction. The program includes interactive teacher created power point presentations that incorporate the topics of insect anatomy in terms of form and function, insect locomotion, mouthparts and eating, survival techniques, and a close up look at five of the thirty insect orders. The power point presentations are filled with colorful illustrations and interesting facts that promote student discussion and interaction. The activities that are used to check for student understanding along the way are high interest and many provide useful springboards for classroom discussion. In Amazing Feats of Adaptation, for example, students look at how insects’ feet are adapted to various functions, such as digging, swimming, hopping, and running. These adaptations are compared to human use of various footwear to adapt to their environment, such as swim fins, hiking boots, and snowshoes.
Throughout the course of study, students observe a variety of specimens, both living and preserved. For example, a magnified real-time view of a ladybug that was eating aphids off of a flower was projected onto the screen in the classroom. In the discussion that ensued, excited students learned a great deal about predator/prey relationships, insect mouthparts, and the role of insects as pests, pollinators, and decomposers.

One of the most exciting aspects of this project is that it is done completely in class. It truly is a student project from conception to execution. When parents first see the students’ work on our Museum Night, they are amazed at the professional appearance of the exhibits. The feeling of pride and accomplishment that the students experience is something that they will never forget.

Our science classes are heterogeneously grouped so that students of all levels, from gifted to special needs, and everything in between, are in the same class. One of the biggest challenges we face is to differentiate and meet the needs of each individual student in this diverse setting. The Insect Museum is engaging and open ended enough to allow each child to show what he or she has learned in their own unique way. Thus, students of all ability levels are challenged to do their best.

Students are also placed in small groups for this project. They select their topic together and then each student selects a subtopic. Thus, they have the support of other members of the group, but also the ability to do things on their own. The other advantage of small groups is that everyone brings different ideas and talents to the group. In the end, the whole group has created something to be proud of.

Learning outcomes are easily assessed using rubrics designed for the project. Because the Insect Museum project is so open ended, most students exceed the required outcome and clearly show what they know in very creative ways. The project design, however, is set up to help all students be successful. As students are working on the project in teams, the teacher is circulating and discussing various aspects of the project with individual students. Thus, if some of the student’s factual data is unclear, for example, the teacher can discuss it with the student. The student can make revisions and discuss their new data with the teacher. By the time the projects are complete, every student has created, revised, and developed a finished product that shows their best efforts.

The rubric for the display board looks at accuracy of student research as well as the organization and creativity of the display. Students are taught a variety of techniques to make their display board interactive, such as the use of sliding pockets, lift the flap questions, and “did you know” fact cups or boxes. Students are required to add two interactive devices to their display. The rubric awards points for the effort displayed in these interactive devices. Students proudly show their interactive devices off to their peers during this process and often compete with each other to see who can make the most interesting display. As a result, these also show the best efforts of the students.

Students also create a three-dimensional model of an insect in its habitat. These models are mixed media and students use model magic clay, papier-mâché, pipe cleaners, and various other materials to create an anatomically correct insect in an appropriate habitat. The models are assessed based on a rubric that awards points based on the anatomical correctness of the insect and the creativity in producing it.

The greatest assessment of the students’ work, however, comes from the Museum Night itself. Students are lavished with positive comments from parents, peers, and other museum visitors. This is the assessment that students will remember long after the school year has ended.
Insect Project Scoring

Insect Museum Display Board:
- 30 points research/bullet points, illustrations, captions (Individual)
  - 15 points first draft
  - 15 points final draft
- 25 points Effort (Individual)
  - (Illustrations w/captions, titles, supplies, team participation)
- 45 points Board (Group)
  - 15 points Presentation / Neatness
  - 15 points Interactive
  - 15 points Creativity

100 points TOTAL

Insect Museum Model:
- 25 points
  - anatomically correct (3 body parts/6 legs/2 antennae/correct number of wings)
  - habitat shown
  - creative display
  - good use of materials
  - index card with common name and scientific name of insect
  - compelling overall presentation
  - effort

Don’t bug me. I know what to do!
Insect Museum
Topic Selection

- Select a topic that **you** are interested in **learning more** about.
- Select a topic that will **catch the interest** of your museum “guests”
- Select a topic that it will be **easy to find information** about
- Try to select a topic that we have **not covered in class**

Possible Topics:
- Pick a particular insect and tell about its anatomy, habits, and lifestyle.
- Pick two different insects and compare them to each other.
- Select a particular characteristic and discuss how it varies in different insects. (antennae, mouthparts, wings, methods of obtaining food, etc.)
- Insects as predators.
- Look at mimicry as a means of keeping predators away.
- Which insects use protective coloration and how does it work?
- How are insects adapted to so many different environments?
- Compare insect wing types.
- Social behavior of bees or ants.
- Insects as a pest.
- Show how insects are important to man.
- Amazing adaptations.
- Honey production. (Bees)
- Silk production. (Silk worms)
- Blood sucking insects.
- Disease carrying insects.
- Water bugs.
- You suggest a topic that you are interested in learning about.

Procedure:
- Submit **THREE (3) topic choices** that you would enjoy doing for your project.
- **Be specific.** (Example: Don’t say my group will compare two insects…tell which two insects you want to compare.)
- **Then list one SUBTOPIC for EACH MEMBER of your group.**
- **The SUBTOPIC** should show the different parts that you will divide your main topic into in order to explain it more clearly.)
- **Prioritize.** (Put the topic you are most interested in first and so on.)
- **Tell why** you think this would be a **good museum topic.**
- **DO NOT BEGIN TO WORK ON YOUR PROJECT UNTIL YOUR TOPIC HAS BEEN APPROVED.**

**NAMES:** (List all group members)
TOPIC IDEA # 1: (Explain your idea in 2 to 3 sentences)

SUBTOPICS: (One for each group member):

TOPIC IDEA # 2: (Explain your idea in 2 to 3 sentences)

SUBTOPICS: (One for each group member):

TOPIC IDEA # 3: (Explain your idea in 2 to 3 sentences)

SUBTOPICS: (One for each group member):
Construction of Your Insect Model

- **Make a sign** with the scientific name to stand next to your model.

- **Use a photograph of your insect** to make a sketch of your model.

- **Locate a picture of the underside of your insect** or another insect in the same insect order.

- As a group, **come up with some ideas** of how to make your insect look like the one in a picture.

- Indicate, next to your sketch, what **materials you will use** on each part of your insect.

- **Count the body parts** of your insect and make sure you have the correct amount of parts.

- In a group discussion figure out how might you **color** your insect so that it looks realistic.

- Check your **research** on your insect’s habitat.

- **Sketch** your insect’s habitat.

- **Label the materials** you plan to use in the habitat.

- Discuss with your group how each part of your insect help it **survive in its environment**.

- As a group, figure out how can you make your model **look more like a real insect**.
Female Atlas Moths send pheromones through a gland at the end of the abdomen to attract males. The males sense the pheromones over several kilometers by their feathery antennae.

The female black witch moth is a little larger than the male black witch moth. The females have a pale band that goes through their wings.

CAN YOU FIND THE LEAF INSECT?

The leaf insect is camouflaging into its surroundings. Can you find it?

Is this a solitary or a social wasp?

Mimicry

Is it a cobra, an owl, or just an atlas moth?

Mimicry offers protection for a bug with no defenses. With the use of color and visual patterns, a harmless bug can give the illusion of a dangerous predator.
Purpose: To develop a well researched display board and insect model that shows not only knowledge of your topic, but also an understanding of how to set up a dynamic exhibit.

Materials: ● Display board  ● Backing paper  ● Insect Model
● Illustrations  ● Titles & Subheadings

Procedure:
1. The construction of this entire project MUST be completed IN CLASS. No credit will be given for components that are constructed at home.
2. Select teams of 3 to 4 students.
3. Each group will propose a topic based on choices suggested by the teacher or based on ideas of the group. NOTE: The teacher must approve your topic before you begin.
4. Use in class sources to begin your research. Also bring in one internet article per person on your topic.
5. Select a subtopic for each member of your group. The subtopics must relate to the general topic you have chosen. Each person is responsible for completing the following tasks relating to their subtopic:
   ● Create a catchy subtitle.
   ● Research your topic thoroughly.
   ● Write 5 supporting details, in your own everyday language, that explains your subtopic.
   ● Get 2 or more large illustrations relating to your subtopic. Write captions for the illustrations in your own everyday language.
   ● All typed information for your supporting details should be size 24 font or larger in one dark color ink.
   ● Subtitles and titles should be large enough to read from a distance of 5 feet away.
   ● Backing paper should be used behind all text blocks, illustrations, titles, and subtitles.
6. Make a nameplate. Include the first and last name of each group member, the class period, and your teacher’s name. Add backing paper before you put this on your display board.
7. Make a classification plate. Include the kingdom, phylum, class, family, order, genus, and species of your insect. Add backing paper before you put this on your display board.
8. Develop an idea for a model that will illustrate something about your topic. You will be given time in class to build your model. **NOTE: your model must be built in class. Insect models MAY NOT be constructed at home.**

9. Develop a plan (“blueprint”) for your display board. Use the information shown in class about focal point, titles, headings, and layout to plan something that is both informative and visually appealing.

10. Assemble your display board. **NOTE: all display boards must be assembled in class only.**

Observations:

1. Be sure to pick a topic that you find interesting so it will be fun to learn about for your group and make an exciting display for our museum. Remember: if you are excited about your topic, then it will be exciting for our museum guests.

2. Make sure you are a contributing member of your team so that you can feel proud of your finished project and so you don’t let your teammates down. Your grade will be based on your individual performance **AND** your ability to work as a member of a team.

Illustration: (Sample only. Yours will be much better!)

**Conclusion:** Have a great time, learn lots, and be an outstanding entomologist!
Albert Einstein said “Imagination is more important than knowledge.” What if we could find a way, however, to challenge both the imagination and the knowledge base that we have tried to help our students develop?

The Mousetrap Car project does just that. While mousetrap cars are an old standard in high school AP physics classes, this project is different and unique because it is designed for middle school students and it incorporates a design component that encourages students to look at the esthetics of their vehicle as well as the mechanical components. Thus, it is a “STEAM” project (Science, Technology, Engineering, Art, and Math) rather than a “STEM” project. In addition, there is a Language Arts component involved as the students explain the workings of their car in the “Mousetrap Manuscript” essay.

Students are very excited as they work in small teams to design, build, test, modify, and race cars that are powered by a single mousetrap. This process allows students to apply to a real life situation most of the material they have learned in our force and motion unit. The idea of building the car is a powerful motivating factor as students learn about topics such as Newton’s laws, momentum, potential and kinetic energy, and friction. The cars are built completely in class, thus ensuring that it is truly the work of the students. The fact that students have complete autonomy in terms of design, rather than building a kit is very appealing to them and a unique aspect of this project.

In addition, students need to consider the aesthetics of their vehicle as well as the engineering design. In real life, no one wants to buy an “ugly” car. Each car is different, unique, and a true paragon of personal expression.

This project embodies the scientific method at its core. Students need to constantly test their design for things like weight, balance, and traction. Designs are modified, problems are solved, and results are carefully noted as the vehicle evolves and changes with each new discovery.

Students begin by developing a blueprint and an artistic design. They must also make choices about dimensions for their vehicle and which building materials they plan to use. Once they are happy with their plan, they begin the process of building the car. Most cars are built from foam board or cardboard from old boxes. Some have been built out of aluminum cans, old plastic water bottles, or empty cookie boxes. CDs or butter tub lids become the wheels. Students try to come up with a unique or unusual theme for their design. Students are so excited by the project, that they often give up their lunch period to work on the car.
Students find the project exciting and fun and, as a result, I think it is a most memorable way to reinforce their knowledge of force and motion. We spend ten weeks learning about force and motion prior to beginning the mousetrap project. Thus, it incorporates state science standards 1a, 1b, 1c, 1d, 1e, 1f, 2a, 2b, 2c, 2d, 2e, 2f, 9a, 9b, and 9c for eighth grade. Visual arts standard 2.1 and common core standards related to reading, research, and writing are also incorporated in this project.

Throughout their course of study, I strive to bring the material to the students in unique ways. For example, we have an inertia day. This involves one discrepant event after another as the students are challenged to explain what happened. They have the concept well under their belt by the time they need to apply it to their mousetrap car.

Students also participate in a variety of lab activities designed to help make key concepts real. In the “Bowl Me Over” lab, students run through a track laid out on the classroom floor in blue tape. They first push a bowling ball and then a basketball through the track with a broom. Now they understand that it is more difficult to start, stop, and change direction if you have an object with more mass. This will also be of value to students in their mousetrap car design.

The concepts of potential and kinetic energy are explored through a video “lecture” that I created just last year. (https://www.youtube.com/watch?v=XGW5X0Ww6XE) There are a series of wonderful pictures and short video clips set to music that attempt to bring across the information about potential and kinetic energy in an interesting and entertaining way. The video is followed by a lab that explores elastic potential energy.

Prior to beginning the mousetrap project, the students complete an in class essay called the “Mousetrap Manuscript.” In the essay, students explain how Newton’s laws, friction, and potential and kinetic energy apply to the operation of the car. By the time we begin building the cars, students have mastered the material.

My science classes are heterogeneously grouped so that students of all levels, from gifted to special needs, and everything in between, are in the same class. One of the biggest challenges I face is to differentiate and meet the needs of each individual student in this diverse setting. I have found that the best way to do this is by developing activities and projects, like the mousetrap car, that are engaging and open ended to allow each child to show what he or she has learned in their own unique way.

Students work on the mousetrap project in small groups. This is beneficial because each student brings different strengths and talents to the team. Students brainstorm ideas to problem solve as issues come up with their cars.

A pamphlet is available to students called the “Handbook of Handy Hints.” This provides suggestions and ideas for some of the frequently encountered situations that arise. I wrote this pamphlet in simple, easy to understand language so that it would be a useful resource for even the weakest student. More advanced students can do research at a variety of on-line sources if they are interested in more complex answers to their questions.

Mousetrap cars are assessed using a rubric. Many things are taken into account, such as the engineering design, the artistic design, teamwork displayed by the group, the finalized blueprint, and success of the car on race day. In addition, the skills developed in this project, such as problem solving, teamwork, the scientific method, and the design and implementation processes, are used in a variety of other assignments throughout the year.

A true understanding of the basic principles can be seen in the successful operation of the car. Friction of moving parts is a common problem that students need to take into account in their design. In order to get full credit for their vehicle, it must be able to travel a minimum of two meters. The more successful cars strive to go
the fastest or the greatest distance. On race day, the competition is fierce and the students are very engaged in
the learning process.

In addition to the race, the most interesting or unique designs are put on display in the office for others to see
and enjoy. Thus, the project allows students to achieve success in a variety of ways. In reality, everyone who
participates walks away with a new perspective on force and motion and a sense of pride in their finished
product.
Purpose: To use your knowledge of the laws of physics to design and build a mousetrap powered car.

Materials:
Provided in class:
• 2 brass axles (6”x3/16”)
• brass lever arm (12”x1/8”)
• 4 rubber spacers
• 36” Kelvar string
• Victor mousetrap
• wood glue

Supplied by students:
• 4 wheels (ex: old CDs or butter tub lids or …)
• Car body (can be made from foam board, thick corrugated cardboard, or an old box, etc. Just remember it must be narrow enough for 6” axles)

IMPORTANT NOTE: Wood does NOT make a good building material for the body of your car.
• 4 small washers (to go between the rubber spacers and the body) optional
• zip lock axle hook (can use a baggie tie)

Procedure:
1. Look at the “basic car” directions and the Handbook of Handy Hints for building tips and modification ideas.

2. Each individual person must complete the Mousetrap Manuscript worksheet. Remember to use your own everyday language as you answer the questions. This is done individually, NOT with your group. Your team may not begin construction until all members have completed this requirement.

3. Develop a design proposal with your team. Decide if you will modify your car to get greater speed or greater distance. Draw and label a schematic diagram (“blueprint”) of what your mousetrap car will look like. Be sure to include metric dimensions. Also include an illustration of your vehicle’s artistic design. (How will it be decorated?) It is understood that your design will be modified during construction to ensure maximum success and that your finalized design may differ from your proposed design. However, before you may begin construction, your design proposal MUST be approved by your teacher.
4. Begin to build your car. **All construction of your vehicle must be done in class.** NO PART OF YOUR VEHICLE MAY BE BUILT OUTSIDE OF CLASS. It should take no more than 2 periods to complete your car, other “building” days are to be used to test and modify your existing design to improve performance in terms of speed or distance.

5. **For safety reasons, YOU MAY NOT MODIFY THE MOUSETRAP IN ANY WAY AND YOU MAY ONLY USE ONE MOUSETRAP.** In addition, you **may not modify the axles or the lever arm.** All design modifications are based on changes made to the wheels, the body, or changes to the shape or mass of the vehicle.

6. Be sure your vehicle is in top form and ready to go for the big race. The following items are **due from each team** at the end of your class period the day before race day:
   - Your **completed vehicle**
   - A **finalized schematic diagram** (“blueprint”) of your vehicle with parts labeled and metric dimensions shown. (One per team)
   - A **colorful illustration** of your vehicle’s artistic design. (One per team)

**Observations:**
- Use class time wisely so that your vehicle is finished on time.
- Remember to clean up your lab materials at the end of the period. **If you leave a mess, points will be deducted from your overall mousetrap car grade.**
- Be creative in your design, but remember the laws of physics as you create!
- Have fun!!

**Conclusion:**
- Your mousetrap vehicle will be due on: _______________________

37
1. What is potential energy? How can you give your mousetrap car potential energy? (What part of the car provides this energy?)

2. What is kinetic energy? Explain how your car’s potential energy is transferred into kinetic energy.

3. When my mousetrap car is at the starting line, according to Newton’s ___________ law of motion, my car is at _______________.
   - In order to make it change its state of motion, I must add a/an __________________ force.
   - Explain how you will add that force: (Describe step-by-step)

4. According to Newton’s _________ law of motion, the mass of my car is directly proportional to its ___________________.
   - That means, the heavier my mousetrap car is, the __________________ force I have to apply to maintain the same _____________________.
   - In order for your car to achieve greater acceleration, describe TWO practical changes that would affect the appropriate variables in the formula $F = ma$. 
5. According to Newton’s ________ law of motion, when my car first begins to move, one observable action/reaction pair is __________
_______________________________________________________
_______________________________________________________.
• Explain why this is an action/reaction pair:

6. What is friction?

7A. Explain one way friction can slow down your mousetrap car: (Where could parts rub together to slow things down?)

7B. How can you reduce friction (rubbing parts slowing the car down) on your car? Give at least TWO suggestions.

8. What is traction? Explain how traction can be helpful to the operation of your mousetrap car.
Summary: This Book-making unit is a UNIQUE COMBINATION of State of the Art-Technology, and Old-Fashioned Craftsmanship. Certainly, learning by doing or "making" has been happening since our ancestors refined the wheel. This unit INTEGRATES World History with the Graphic Arts and Technology.

Adaptation: While I did this with 7th grade World History Students, the concept could be APPLIED AT ANY GRADE LEVEL and within ANY CONTENT AREA. My class has iPads, but most children these days HAVE ACCESS to the technology needed for this unit, if the teacher would let just them get their Smart Phones and iPads out from their backpacks and use them for instruction! Anything you can do on an iPad, you can do on a Smart Phone. There are many FREE QR code GENERATORS and READERS students and teachers can download and use. We used KAYWA as our generator and QR SCAN as our reader.

The Idea: The project begins by having students produce a poster after each chapter of study in the unit. Poster after poster were pinned on the walls. Finally, at the end of the unit they were published into a book. The posters served to showcase what each student had learned as they JOURNEYED through the unit, not just at the end. Publishing the book was the culminating activity.

The Sequence: At the conclusion of a chapter, students were given back all their assignments. They choose from their maps, essays, charts, illustrations, etc., to design and build a poster. The work on the poster has already been graded as individual assignments, so each student picked their best pieces of work to exhibit on the poster. The poster was graded by using a RUBRIC calibrating specific GRAPHIC COMPONENTS OF A POSTER. Every student had a spot on the wall to display their poster. Some students had a lot of pieces of work they wanted to showcase, so they used the front and back sides of their poster, others who had more difficulty with the content, might only fill up one-half a side. But, everyone posted something they were proud of. It depended on the quality of their work during the chapter. This transformed the classes' learning space making the classroom more STUDENT CENTERED, and interactive. With the completion of each chapter, Students simply place their new poster over the previous poster which was a PRACTICAL WAY to store the students’ work. Students

PEER EDIT each other’s poster before I graded it knowing that, “I don’t correct their work, I only grade it.” Once posted, students got chances to examine all the works on the wall, like a gallery, and put positive comments on them using post-its. At the end of the trimester, students gathered their posters and published a literary composition adding their own headings, titles and table of contents. All works inside the book had
already been graded, and were already their best pieces of work, so the book was graded based on a RUBRIC which evaluated the GRAPHIC DESIGN of the cover page and table of contents of the book.


This PROJECT BASED LEARNING, wasn’t about a report. It was about students using what they knew about The Roman, Byzantium and Chinese Civilizations we studied and then creating their own literary composition. It wasn't about building a replica of our textbook, Medieval Times, published by Prentice-Hall. It was about researching an ancient culture and honoring it by designing a book as their own monument to it.

Relevancy: TECHNOLOGY was integrated throughout the unit. This can be easily seen by the STUDENT GENERATED QR CODES in the books. These made the books INTERACTIVE by connecting the reader to a website containing a gallery of PRIMARY ARTWORKS, narratives, or further information on the topic. What the books do not show, is the behind-the-scenes technology it took to get 150 DIVERSE STUDENTS who attend a Chapter I School, to equally access CA State Standards 7.1

ROMAN EMPIRE; 7.3 MEDIEVAL CHINA; and the CA Common Core Standards for Literacy in Social Studies: INTEGRATION OF KNOWLEDGE AND IDEAS. This scaffolding was largely done through instructing students on how to use their iPads. The iPad has revolutionized the process of teaching and learning in my classroom making my role of the teacher being less of the, "sage on the stage," to more of a "guide from the side!" I GENERATED QR CODES TOO, which quickly and easily connected students to websites and videos on their topics of study. In my class, students learned to REPLACE their notebook, three ring binder, dictionary, atlas and encyclopedia with features on the iPad.

Effects on Achievement: One of the things that surprised me was when I surveyed students I found out that the majority of students HAD NEVER PUBLISHED an expository poster or book before. They had to learn the ARTISTRY of spacing, font, sizing, drawing, cutting, gluing, and editing that went into their published final products. When students understood that assignments were not just turned in, but had a

POSSIBILITY OF BEING PUBLISHED and displayed for PEER REVIEW, their individual assignments became more MEANINGFUL to the students and they tended to put more effort into the tasks at hand. At its best, book-making allowed students to follow their own interests and passions and create something that was UNIQUILY theirs, while APPLYING THE KNOWLEDGE that they had gathered about technology, art and the social sciences.
Summary: History is a subject that never really changes, but that doesn’t have to make it boring. The State Standards tell teachers WHAT to teach, but they don’t tell us HOW to teach it. That’s where the craft of teaching comes in! My colleague and I have created a model unit that is a UNIQUE COMBINATION of State of the Art- Technology, and “Old School,” Historical Content. This unit INTEGRATES the Social Sciences with the Art of Movie-Making and Technology through DISCOVERY LEARNING by having students CREATE AN IMOVI E TRAILER. A movie trailer consists of a series of carefully selected shots from a film being advertised. Since the purpose of the trailer is to attract an audience, these clips are usually drawn from the most exciting or important parts of the film, however in an abbreviated form without producing “spoilers.” We used these same ideas and had 7th grade students create trailers to SUMMARIZE a unit on MEDIEVAL ISLAM and 8th grade students to create trailers to act as a “teaser” for the INTRODUCTION of a written student report on U.S. FOREIGN POLICY in the WAR of 1812.

Relevance: George Washington Carver said, “When you do the common things in life in an uncommon way, you will command the attention of the world!” Movie-making was able to COMMAND THE ATTENTION of our 7th and 8th grade DIVERSE STUDENTS during a 4 day production of a movie trailer for a CULMINATING ACTIVITY after a unit of study. New technology is common, but new thinking is rare! When you stepped inside our classrooms of Movie-makers you entered a THINK TANK. There was a whirl of productive noise and motion, like busy bees, students were exploring unfeasible ideas and honing them into concrete scripts. Storyboards became prototypes. Prototype films were PEER-EDITED according to the RUBRIC standards. Designs changed and trailers were finally published into Student Tube or Google Drive, to ultimately be shared worldwide. In this open-ended process, STUDENT CENTERED ENVIRONMENT, our Title I, middle school students learned how, “A picture can tell a thousand words, but a few words can change its story!” This unit was not only about learning the technology associated with the iMovie Application and QR Code Generator, but the sharing of knowledge and information; communicating efficiently, thus BUILDING LEARNING COMMUNITIES and creating a culture of scholarship in our classrooms. At its best, movie-making allowed students to follow their own interests and passions by CREATING something that was UNIQUILY theirs, while APPLYING THE KNOWLEDGE that they had gathered about technology, the art of movie-making and the factual content of the social science unit.

The Steps: Along with the usual outlining, map-making, charting, and report-writing during our unit of study, we had students begin gathering media for the film. They CREATED PICTURE FILES in Google Docs with
key terms from the unit. Names of people, places and events were researched on the internet. There is a component of INFORMATION LITERACY as students search for and gather pictures/artifacts to include in the trailer. We teachers GENERATED QR CODES for specific sites we wanted to expose our students to during their research.

These QR Codes ensured that access would be quick, safe and accurate. This made research easily accessible for STUDENTS WITH SPECIAL NEEDS. The New York Metropolitan Museum was often used because students could get pictures of PRIMARY SOURCED artwork or artifacts for ALL TIME PERIODS and CULTURES WORLDWIDE. Students also searched on their own and often came up with other appropriate sites that we generated QR Codes for and share with the classes. The second step in making the I-Movie trailer was taking the unit’s study guide and having students use it as a guide for WRITING THEIR SCRIPTS. Third, the students picked from the movie trailer component of the iMovie APPLICATION and chose one of its themes. The transitions and animations are already built-in, but students can edit these themes to showcase their work in a different ways. VISUAL LITERACY comes into play here with the choice of theme. The trailers were very short exciting digital stories, EFFECTIVELY SUMMARIZING or INTRODUCING the CORE CONTENT areas.

One great thing about these short films was that we could easily watch them in one period and have students use the RUBRIC and assess the films alongside us, teachers. Next we had STUDENTS UPLOAD their movie-trailers to Student Tube or Google Drive. Then STUDENTS GENERATED QR CODES and glued them to posters which had other pieces of work from the unit that students felt SHOWCASED THEIR BEST EFFORTS on the unit.

Finally, we made a GALLERY OF POSTERS in our classrooms and students had a chance to INTERACT with the posters, scan the QR Codes and watching movie-trailers from other classes. This allowed for the INTEGRATION of ENGLISH LANGUAGE LEARNERS with HONOR STUDENTS, which normally do not get to interact because of tracking. Our work samples come from our Honor Classes, but ALL CLASSES PARTICIPATED in the units and experienced great success!

Adaptation: While we did this unit with our 7th and 8th grade Social Studies classes, the concept could be easily APPLIED AT ANY GRADE LEVEL and within ANY CONTENT AREA. Our classes have iPads, but most students today have the technology needed for this unit, if their teachers would let just them get their SMART PHONES or IPADS out of their backpacks and use them for instruction. Every part of the creation process; writing, recording, editing, and distributing; is possible on these devices that can fit into your pocket! I-MOVIE is FREE and there are many FREE QR code GENERATORS and READERS students and teachers can download and use.

We used KAYWA. We used GOOGLE DRIVE and STUDENT TUBE as our URL SERVERS for the I-Movies. A movie trailer is a very short, but exciting digital story, summarizing the content and/or process in any curriculum area.

State Standards: CONTENT STANDARDS: 7.2 MEDIEVAL ISLAM; and 8.5 FOREIGN POLICY/WAR of 1812. COMMON CORE STANDARD: Literacy in History/Social Studies: INTEGRATION of KNOWLEDGE and IDEAS.
OLD SCHOOL CURRICULUM MEETS NEW SCHOOL TECHNOLOGY
2015 Ventura County Impact II Grant

District: Ventura Charter School
School: Ventura Charter
Participant(s): Bethany Ellis and Ashley Johnson

Lesson Plan Title: Passion Project
Lesson Plan Grade Levels: 1, 2, 3, 4, 5, 6, 7, 8
Lesson Plan Subject Areas: Language Arts/Reading (SAGE Category), History/Social Science, Theater

"You have to be burning with an idea, or a problem, or a wrong that you want to right. If you're not passionate enough from the start, you'll never stick it out." — Steve Jobs

During school, all children are exposed to sports, music, art, and other activities. Some of these activities ignite a spark inside of them. For a lucky few, these sparks turn into passions and become their identity as adults. However, for many, these sparks get pushed aside as people age. They are regarded as childish fun with no purpose besides nostalgic memories. People might talk about them from time to time with friends saying, “One time in school a photographer visited our class. I never knew taking pictures could be so fun! Gosh, I haven’t practiced photography in years…”, not realizing until then they had forgotten all about that spark.

As teachers of third and fourth grade students, we believe this is the time when sparks can be nurtured and develop passions that stay with them throughout life. Through the Passion Project, we tapped into this critical time and supported students in following their passions.

As a class we defined a “spark” as “an activity of choice that brings happiness and takes effort, inspiration, and creativity”. We wondered, “How can our sparks strengthen our community?” and “What does my spark give me?” After learning interview techniques, students interviewed classmates and family members. Then we invited community members to school for a “Spark Day”. Nineteen presenters shared their sparks ranging from sound engineering to woodworking. Students reflected upon this experience using Today's Meet, an online chatroom, writing comments such as, “If you love something enough it can become your job”

Students brainstormed their sparks in life and created an art piece called, “What Makes Me Tick” to represent all of their sparks that bring them joy. Then, students chose one spark they felt most passionately about and created a SMART Goal (S=specific, M=measurable, A=attainable, R=resources, T=timely) for this spark now called their “passion.” Students worked with a “passion partner”, a supportive adult in their lives, recorded their progress toward their goals through videos and photographs, created a Google Presentation to demonstrate their growth, and presented their completed goal. Students shared growths in tennis skills, filmed a mini baking episode to show how to bake cookies, memorized lines for a monologue to act, and much more. The passion in the room was tangible and the students were proud of each other’s accomplishments while being further inspired.
For a poetic expression of their passion, students wrote poems inspired by Ntzoke Shange's book, "I Live In Music, further exploring how important these passions are to them. They typed their poems into a Google document and created a collage to accompany the poem using student-painted decorative paper.

We continued to learn about passions, engaging with professionals demonstrating how they use their passions. We traveled up to UCSB and participated in a Physics Circus presented by Physics graduate students. We went to the theater to watch professionals with a passion for entertaining. We invited a balloon artist to share her passion and how she makes a living doing it! We invited a storyteller who shared his passion for his Native American heritage. Lastly, we invited an artist to teach us the techniques she uses for painting portraits and created our own masterpieces.

With background knowledge and student interest, we began the second part of the project to answer the driving question, "How can our passions impact ourselves and others?" We first taught each other about our passions and wrote informational papers about our passions using a table of contents and informational structure. Students created Google Sites for their informational papers and inserted videos and images to be shared. Sharing our websites promoted even more enthusiasm and readiness to learn about professionals in each field.

Next, students chose “Passion Professionals”, people who have the same passions each student has and make a living doing it, to research. We learned online research skills, studied features of nonfiction text (table of contents, headings, glossary, indexes), took notes on each passion pro, watched online interviews with the pro, and turned their notes into research papers.

To culminate the project, we held a nighttime museum called, “Passion Palooza,” where students dressed as their Passion Pros and presented to family, friends, administration, and board members. To prepare for this, students created notecards from their research paper and made costumes and props. Students first presented to each other and engaged in “Critical Friends Groups” to receive feedback. Using protocol statements such as, "I like," I notice," and "I wonder", students provided kind, specific, and helpful comments to improve each other’s work.

The Passion Palooza was magical with over 400 people in attendance! As we closed the museum, the crowd erupted in applause.

To reflect upon the project, students and parents engaged in a Today's Meet to share their thoughts, feelings, and experience. Lastly, the children reflected on their learning through self-reflective writing and a special ceremony called Council. In their reflections it was clear that students discovered answers to our guiding questions and learned that their passions bring them joy, identity, independence, and self-confidence. Our classroom communities were transformed by this project as students developed stronger connections based on their passions and cultivated more understanding of differences by truly seeing each other.

The Passion Project was differentiated and assessed in a variety of ways. Opportunities for learning were differentiated using sentence frames, word banks, videos, pre-teaching and reading with specialists, heterogeneous partner groupings, and selecting nonfiction articles to name a few. The informational paper, research paper, and presentation were assessed using a three-point rubric for self-assessment and teacher assessment.

The concept of the Passion Project can be applied to any grade level with high student engagement. To promote lifelong learning it is important for us to take Common Core standards and bring them to life for students in an authentic meaningful way. This project did just that and more. It honored the whole child, connected our
students and community, and hopefully reminded them to make time for their passions throughout their lives and not let them get pushed aside into mere memories.
Passion Project Supporting Documents

1. Student Learning Targets
2. California Common Core Standards Addressed
3. Rubrics for Informational Paper, Research Paper, and Presentation
4. Research Paper Support for Students
5. Student Research Papers
6. Photographic Evidence
7. Parent and Student Feedback using “Today’s Meet” online chatroom

Separate document (these documents were scanned to the computer)

8. Student Google Presentations for their goals
9. Student Websites with informational paper about their passion
Passion Project Supplemental Materials:
Student Learning Targets for the Research Paper and Museum

Research Writing:
1. "I can conduct short research projects that build knowledge about a topic."
2. "I can include different kinds of facts and details such as numbers, names, and examples."
3. "I can take notes and use information from books, the internet, and my own knowledge and observations."

Informational Writing:
1. "I can take notes and write sentences that inform my reader."
2. "I can make choices about organization into categories. I might have used compare/contrast, cause/effect, or problem/solution."

Technology:
1. "I can create a website using my writing and pictures to help teach my readers."

Speaking
1. "I can create an oral presentation using research to teach others what I know."

Passion Project Supplemental Materials:
California Common Core Standards Addressed

Grade 3:

- Speaking and Listening - Comprehension, Collaboration and Presentation of Knowledge and Ideas

CCSS.ELA-LITERACY.SL.3.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.3.3: Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
CCSS.ELA-LITERACY.SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

- **Reading: Informational Texts**
  CCSS.ELA-LITERACY.RI.3.4: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.

  CCSS.ELA-LITERACY.RI.3.5: Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.

  CCSS.ELA-LITERACY.RI.3.9: Compare and contrast the most important points and key details presented in two texts on the same topic.

- **Writing: Informative or Explanatory Texts**
  CCSS.ELA-LITERACY.W.3.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

  CCSS.ELA-LITERACY.W.3.2.A: Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.

  CCSS.ELA-LITERACY.W.3.2.B: Develop the topic with facts, definitions, and details.

  CCSS.ELA-LITERACY.W.3.2.C: Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.

  CCSS.ELA-LITERACY.W.3.2.D: Provide a concluding statement or section.

- **Production and Distribution of Writing:**
  CCSS.ELA-LITERACY.W.3.4: With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1-3 above.)

  CCSS.ELA-LITERACY.W.3.5: With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 3 here.)

  CCSS.ELA-LITERACY.W.3.6: With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.

- **Research to Build and Present Knowledge:**
  CCSS.ELA-LITERACY.W.3.7: Conduct short research projects that build knowledge about a topic.
CCSS.ELA-LITERACY.W.3.8: Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

**Grade 4**

- **Speaking and Listening - Comprehension, Collaboration and Presentation of Knowledge and Ideas**

  CCSS.ELA-LITERACY.SL.4.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

  CCSS.ELA-LITERACY.SL.4.4: Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

- **Reading Informational Texts:**

  CCSS.ELA-LITERACY.RI.4.2: Determine the main idea of a text and explain how it is supported by key details; summarize the text.

  CCSS.ELA-LITERACY.RI.4.3: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

  CCSS.ELA-LITERACY.RI.4.4: Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.

- **Writing: Informative or Explanatory Texts:**

  CCSS.ELA-LITERACY.W.4.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

  CCSS.ELA-LITERACY.W.4.2.A: Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.

  CCSS.ELA-LITERACY.W.4.2.B: Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.

  CCSS.ELA-LITERACY.W.4.2.C: Link ideas within categories of information using words and phrases (e.g., another, for example, also, because).

  CCSS.ELA-LITERACY.W.4.2.D: Use precise language and domain-specific vocabulary to inform about or explain the topic.
CCSS.ELA-LITERACY.W.4.2.E: Provide a concluding statement or section related to the information or explanation presented.

- **Production and Distribution of Writing:**
  CCSS.ELA-LITERACY.W.4.4: Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)

  CCSS.ELA-LITERACY.W.4.5: With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 4 here.)

  CCSS.ELA-LITERACY.W.4.6: With some guidance and support from adults, 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 one page in a single sitting.

- **Research to Build and Present Knowledge:**
  CCSS.ELA-LITERACY.W.4.7: Conduct short research projects that build knowledge through investigation of different aspects of a topic.

  CCSS.ELA-LITERACY.W.4.8: Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.
Passion Project Supplemental Materials:
Rubrics for Informational Paper, Research Paper, and Presentation

Name __________________
Passion: _______________

Passion Project Informational Writing Rubric

Use this table to grade:

<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>I met this target and completed it independently.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>I met this target with support.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>I did not meet this target.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Targets</th>
<th>Self Assess</th>
<th>Teacher Assess</th>
</tr>
</thead>
<tbody>
<tr>
<td>I wrote a Table of Contents with 3-8 topics (basics, safety, materials, ...)</td>
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<tr>
<td>I wrote one page about each topic that has at least 5 complete sentences.</td>
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<td></td>
</tr>
<tr>
<td>I wrote one or more “If /Then” statements.</td>
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<td></td>
</tr>
<tr>
<td>“If _____, then ______.”</td>
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<tr>
<td>I wrote one or more “Compare/Contrast” statements.</td>
<td></td>
<td></td>
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<tr>
<td>“______ is similar/different to ____ because ____.”</td>
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</tr>
<tr>
<td>I wrote two or more Problem/Solution statements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“If <strong><strong>(problem)</strong></strong>, one solution is ______.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“If the problem is ______, one solution is ______.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Another solution is ______.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My sentences make sense.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I spelled words correctly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I capitalized correctly.</td>
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</tbody>
</table>

Name __________________
Passion Professional : __________________________
### Passion Professional Research Writing Rubric

Use this table to grade:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>3</td>
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<tr>
<th>Learning Targets</th>
<th>Self Assess</th>
<th>Teacher Assess</th>
</tr>
</thead>
<tbody>
<tr>
<td>I read and took notes from books, the internet, and my own knowledge and observations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I used my notes to write a 5 paragraph research paper about my passion professional.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I included different kinds of facts and details such as numbers, names, and examples.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I included information about my passion professional’s life.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I included information about my passion professional’s contributions to the field and world.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In my introduction I wrote a “Hook” to engage my readers and stated my thesis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In my conclusion I restated my thesis and connected the information to myself.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My sentences make sense.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I spelled words correctly.</td>
<td></td>
<td></td>
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<tr>
<td>I capitalized correctly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I used transition words for each paragraph.</td>
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</table>

Name __________________
Passion Professional : _______________________

59
Passion Pro Palooza Presentation Rubric

Use this table to grade:

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Targets</th>
<th>Self Assess</th>
<th>Teacher Assess</th>
</tr>
</thead>
<tbody>
<tr>
<td>I wrote notecards using my research paper to include accurate details about my passion professional.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I wrote my notecards in an organized way.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I engaged in Critical Friends Groups to practice.</td>
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<td></td>
</tr>
<tr>
<td>I spoke loudly so others could hear me.</td>
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<td></td>
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<tr>
<td>I spoke clearly at an understandable pace.</td>
<td></td>
<td></td>
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<tr>
<td>I wore a costume and had a prop.</td>
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</tbody>
</table>
# Passion Project Supplemental Materials: Research Paper Structure for Students

<table>
<thead>
<tr>
<th>Paragraph 1</th>
<th>1. <strong>Hook/Question to engage your reader</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>```</td>
</tr>
<tr>
<td></td>
<td><strong>Did you know _____?</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Have you ever heard of _____?</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Have you ever _____?</strong></td>
</tr>
<tr>
<td>**2. <strong>Mini Overview of PRO and passion</strong></td>
<td>```</td>
</tr>
<tr>
<td></td>
<td><strong>For anyone who doesn’t know who _________ (pro) is, she/he is a ___________________(type of (passion) who ________________.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>(Passion) is _______________(Add important History/Background/Info about your passion)</strong></td>
</tr>
<tr>
<td>**3. **Thesis</td>
<td>```</td>
</tr>
<tr>
<td></td>
<td><strong>1 _____is an (interesting/important/influential) (activity) because of her/his life, career, and impact on ______.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paragraph 2</th>
<th><strong>Topic Sentence:</strong> <em>One reason _____ is an ______ interesting/important/influential person is because of their life.</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Life</strong></td>
<td>List 3 to 5 <strong>crucial</strong> details about your pro to support topic sentence. Include what is important.</td>
</tr>
<tr>
<td></td>
<td><strong>When were they born?</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Where do/did he/she live?</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Who was their family - what were they like?</strong></td>
</tr>
<tr>
<td></td>
<td><strong>When and how did they discover their passion?</strong></td>
</tr>
</tbody>
</table>
- How did their passion change over time?
- Personal life successes/hardships
- Character Attributes (determination, courage, hard work, helpful, kind, …)

**Conclusion sentence**

_____________________________________________________________

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________


**Paragraph 3**
Career Highlights
Lasting Impact

**Topic Sentence:** *Another reason ______ is an interesting/important/influential ______ (list passion, e.g. artist) is because of their career and impact.*

List 3 to 5 detail sentences to support topic sentence. For example:

- change they have inspired
- success and hardships in career
- influence they have had on others/the world
- motivation they give to others
- how their influence is still seen today

**Conclusion sentence**

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
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_____________________________________________________________________
_____________________________________________________________________

63
<table>
<thead>
<tr>
<th>Paragraph 4 Personal Connection</th>
<th>Topic Sentence: <code>Finally, ________ (person/passion) matters to me because ___________.</code></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>· List 3 to 5 detail sentences to support topic sentence.</td>
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<tr>
<td></td>
<td><strong>Conclusion sentence</strong></td>
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____________________________________________________________________
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<table>
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<tr>
<th>Paragraph 5 Conclusion</th>
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</thead>
</table>
| **Restate Thesis:** As you can see, _____ is an inspiration to me and to ________ (field). _____ has been interesting/important/influential (passion) because of his/her career, life, and influence on others and myself.
| **Conclusion Sentences:** _____ has impacted my understanding/view on (passion) and helped me grow my passion. _____ inspires me to ________________.
Student Research Paper # 1

Arthur Ashe

Have you ever played tennis? Do you watch it on TV? Today there are many famous tennis players around the world, but none made tennis what it is today. Arthur Ashe, the first African American to play professional tennis, was the number one player in the world! If you don’t know much Tennis is a quick footed sport where it is either one person on a team or two people on a team. Each person has a racquet to hit the ball over the net. Arthur Ashe is an important person because of his life career and impact on tennis and me.

One reason Arthur Ashe is an important person is because of his life. Arthur Ashe was born July 10, 1943 in Richmond, Virginia. Arthur Ashe’s mom died when he was 7. Arthur Ashe died from HIV on February 6, 1993 in New York City.

Another Reason Arthur Ashe is an important person is because of his career and impact on tennis. Arthur Ashe was the first African-American tennis player to play pro. Today Arthur Ashe is remembered in the tennis world as a hero.

Finally, Arthur Ashe matters to me because he is a hero. No one would let him play on courts because of the color of his skin, so he played on courts that were cracked. With perseverance and commitment to the sport of tennis, Arthur Ashe changed sports for African American people and today he still inspires kids like me. Arthur Ashe’s legacy lives through his school foundation and tennis.

As you can see, Arthur Ashe is an inspiration. Arthur Ashe is an important person to tennis because of his life, career and influence on others and myself. Arthur Ashe has impacted my view on tennis and helped me grow my passion. Arthur Ashe has inspired me to play more tennis and push boundaries.

Student Research Paper #2

Jane Goodall

Did you know that chimpanzees wage war and invent tools to meet their needs? Well, you probably wouldn’t if Jane Goodall hadn’t researched them. For anyone who doesn’t know who Jane Goodall is she is a biologist who studied the chimpanzees of the Gombe Stream reserve in Africa. Jane Goodall is an influential person because of her life, career, and knowledge we have about chimpanzees.

One reason Jane Goodall is an influential person is because of her life. Jane Goodall was born on April 3 1934, and discovered her passion when she was 21 years old when Lose Leeky wanted her to study chimps. But when she arrived at her destination, the chimpanzees were very afraid of her and Jane Goodall was unsuccessful for a few months. One day a chimp (who she later named David Gray beard) came into her camp and stole her lunch (which was a banana,) right out of her bag! The old chimp came every day and started to encourage the other chimps
into the camp and Jane Goodall was able to research them. One of the most incredible discoveries was when Jane Goodall found that chimps wage war. This was a major breakthrough for her and encouraged her to continue in her studies, but Jane had not yet finished college and had to take a break in her studies and go back. As you can see, Jane Goodall is an interesting person because of her life.

Another reason Jane Goodall is an influential biologist is because of her career and impact. She started her research by moving to Africa and after a while reporting her first big information of the Gombe stream chimpanzees. It all started when Jane Goodall was watching some chimps investigating a termite mound when the older Flo, showed her two young ones Flint and Fifi how to get the grubs on the inside of the mound by sticking a strong stick into the holes of the termite home. After that discovery, Jane Goodall found another discovery about how chimpanzees use body language more than anything and also enjoy grooming each other. Usually the chimps in higher rank in the tribe are the ones to be groomed. As you can see, Jane Goodall has an influential career because of the fascinating knowledge she gave us.

Finally, Jane Goodall matters to me because she sacrificed time with family making her own family and most of college to live in Africa for over forty two years to give us the knowledge we have on chimpanzees and save them from extinction. Jane Goodall inspires me to help the animals, to save the bears and wolves and make a difference in the world.

As you can see, Jane Goodall is an inspiration because of her life, career and influence on others and myself. Jane Goodall has impacted my understanding on working with animals and helped me grow my passion. She inspires me to help the animals and change the way we think of them.
### Passion Project Supplemental Materials: Photographs

<table>
<thead>
<tr>
<th>Photographic Evidence</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Spark Day presentations](image1.png) | **Spark Day presentations**  
Balloon artist creates a giant dog with a jetpack on stage! |
| ![A woodworker shows students how to use different saws.](image2.png) | **A woodworker shows students how to use different saws.** |
An audio engineer lets students experiment with the 16 tracks of Marvin Gaye’s “What’s Going On” to make their own mix.

UCSB Physics Circus to introduce how we can follow our passions into college for careers.

Students enjoying each other’s websites with informative writing, videos, and images.
<table>
<thead>
<tr>
<th>Student writing notecards for the museum using their research paper.</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Critical Friends Group” to practice presentation skills for the museum.</td>
</tr>
<tr>
<td>Dress rehearsal with our little buddies.</td>
</tr>
</tbody>
</table>
Passion Pro Palooza
A student presenting to a crowd of adults during the museum.

Frida Kahlo (performed by a student with a passion for art) tells the audience about her troubled life and its influence on her art.

Parent and sibling videotaping their student at the museum.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Decorated equestrian, Charlotte Dujardin, makes an appearance.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Lanterns lit the outside courtyard and students froze in position ready to be “tapped” to life. Once tapped the student comes to life as the professional and describes who they are, information about their life, what contributions they made to their field and the world.</td>
<td>Parents, family, and friends attended the museum.</td>
</tr>
<tr>
<td>Celebration of Learning in the classroom with juice and food.</td>
<td></td>
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</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class Photograph</td>
<td></td>
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</tr>
</tbody>
</table>
Passion Project Supplemental Materials:  
Passion Pro Palooza Feedback and Reflections on Today's Meet

Parent Feedback

Students did a fabulous job of representing their pros. Costumes, props, and presentations were awesome! Nicely done, everyone! about 2 hours ago by Melissa

Inspirational! You all did an amazing job. I feel so blessed to be a part of your lives and this great school. 2 days ago by Donna

Spectacular! Interesting, informative, and fun! So much thought, research and planning went into this, the students should be so proud! 2 days ago by Kathy

AMAZING!!! The student presentations were all so fantastic and informative. Thank you teachers and students for a wonderful experience! 3 days ago by Julie

I honor all the kids that stuck to the process, overcame all difficulties and their fears, and just blew everyone away. 3 days ago by Chris

Once again, I am blown away by our teachers and students. Thank you! It was wonderful to learn about each of your passions. Bravo! 3 days ago by Monica

Well done! You could tell that everyone put in a lot of thought and hard work into their presentations .3 days ago by Anamaria

Student Reflections

I liked typing and making websites. about 5 hours ago by Victor

I liked that everybody researched, wore costumes, and did a great presentation! about 5 hours ago by Stella

I felt nervous about presenting but during the Passion Project Palooza I enjoyed it and wanted to stay. 2 days ago by Sebastian

I learned about someone I did not know who also likes to bake. 2 days ago by JackA

I like it that we did the passion project because I got to learn more about my passion. 2 days ago by Emilie

It was a great and fun experience because we got to tell people about our passions. and research a professional. 2 days ago by Hudson
I learned a lot from everyone! We all worked so hard doing research, writing, and practicing. Good job everyone! 2 days ago by Zoe

I liked last night because I got the chance to teach adults about my passion and my passion pro. 2 days ago by Juliana
I loved the experience of us taking all our hard work and research to create a great presentation to share with others. 2 days ago by Theo

It went by fast because we were having fun. 2 days ago by Kai
My spark

Click HERE to see my drawing
My Passion

MY GOAL: I will be able to hit a proper kick serve in tennis. My Dad will video me every week to record my progress.
Watch my right foot in all three videos. Look for a difference.

Week 1

https://www.youtube.com/watch?v=atENX3H8B6E&index=5&list=UUR02vo48O8cpMTqvdZUoXEQ
Week 2

https://www.youtube.com/watch?v=cclRGv0K-b8&feature=youtu.be
Week 4

This is your reward for serving well
New goal

Goal: Hit a backhand with proper form. My Dad will video each week.
Passion pro: Roger Federer

Roger Federer has won 17 grand slams, and been in the finals every year from 2010.
1: What is Minecraft?

Chapter one: What is Minecraft?

Minecraft is a sandbox LEGO type of game. Unlike LEGO's, Minecraft is on a screen. Another reason why Minecraft is different than LEGO's is because you need to gather materials in Minecraft. If you play Minecraft then you can trot through the wilderness gathering resources, food, and more! Minecraft is also like Terraria. If the problem is not knowing how to play, one solution is going to the third page. Another solution is getting practice and you'll know how to play after a while. If the problem is your console freezes, then one solution is restarting your console. If you have a PC or iOS then you can download mods, texture packs, maps, skins, and a lot more things. Minecraft is also different than many other games such as Mario Kart, because Mario Kart is a racing game and Minecraft is a building game. If the problem is people say bad words on multiplayer, one solution is turning off chat box.

Comments

You do not have permission to add comments.
Minecraft

Table of contents
1. What is Minecraft?
2. The basics
3. How to play Minecraft
4. The creator of Minecraft
5. Versions
6. Types
7. mods
8. Texture packs
9. Benefits of Minecraft

https://sites.google.com/a/venturacharterschool.us/miles-passion-project/home
2: The basics

Chapter two: The Basics
The first thing you'll need to know is to learn the basics. At the beginning of your minecraft adventure you're going to need a shelter.

Gather some materials to build a house. Some materials are, wooden planks, (gathered from wood) cobblestone, (gathered from stone) and dirt (gathered from a fist or a spade). Other basic things are Tools. Once you start to get yourself a home you should probably get some tools. If you don’t have tools then you won’t be able to survive. The tools are, swords, pickaxes, axes, spades, and hoes.

Comments

You do not have permission to add comments.
3: How to play minecraft

Chapter 3: how to play minecraft
One thing to do to play minecraft is, putting your fingers where they go on the keypad, (if using a computer) screen, (if you're using a mobile device) or controller (if you're using a game console) before opening minecraft. Another thing that you need to do in minecraft that you don’t do in other games such as terraria is, you need to make beds/bed to sleep through the night. Finally in minecraft you need to build a shelter right when you spawn into your world.

Comments
You do not have permission to add comments.
4. The Creator Of Minecraft

Chapter 4: the creator of Minecraft
The creator of minecraft is Markus Persson, also known as Notch. He discovered his passion of programing when he was seven years old! He made his first game when he was eight. He was born on June 1st 1979, stockholm sweden. His father is Swedish and his mother is Finnish. In 2005 he worked at KING.com. Four years later he left that job and worked for JALBUM. He is also the co-founder of Wurm Online. Minecraft was released on november 2011! In the same year of release, the brilliant game sold one million copies! A couple months later it sold its second million, and then its third million! He created pocket edition (which is on tablets, iphones, ipads, macs, and androids.) and the Xbox version. The game sold more than 20 million copies since its release!

Comments

You do not have permission to add comments.
Miles' Passion Project

5. Versions

Chapter 5: versions
In minecraft there are versions. A version is an update. So far the versions go up to 1.8.1. The version started at 1.0 and it gets better and better when the number go's up. In each version there is a better update so 1.8.1 is better than 1.0 because minecraft has grown so much since 1.0. So let’s say in five years there’s 12.9, then it’ll be Way better than 1.0. There has to be versions because then minecraft would just be a little, dumb, and boring game.

Comments

You do not have permission to add comments.
6. Types

Chapter 6: types
There are four types of minecraft. The four are, creative, survival, hardcore, and adventure mode. In creative, you cannot die unless you fall into the void. You also get unlimited resources, and you don’t need to kill anything, break anything, or even do anything. In survival mode, you have to kill mobs, (animals) get your own resources, and break stuff with tools. In hardcore, it’s exactly like survival but you only have ONE life. In adventure mode, it’s again exactly like survival, but you can’t break blocks with your fist. You can only break blocks with the correct tool.

Comments

You do not have permission to add comments.
7. mods

Chapter 7: mods (modifications)
In minecraft there are mods that you download. Mods can add stuff to your default minecraft, or they can change it. Some mods are based on movies, books, television shows, video games, and some are just from your imagination. there are mods like, the moph mod, doctor who mod, too-many-items, not enough items, shapeshifting mod, beer and apple syter mod, twilight forest mod, and a lot more that you can download!

Comments
You do not have permission to add comments.
8. Texture packs

Chapter 8: texture packs
Texture packs are another thing that you can download for Minecraft. Texture packs make your Minecraft world look different. There are so many texture packs that you can download.

Comments

You do not have permission to add comments.
9. Benefits Of Minecraft

Chapter 9: benefits of minecraft
One benefit of minecraft is, it stretches your imagination in many ways. Another benefit is that it’s really fun. There are tons of benefits of minecraft.

Comments

You do not have permission to add comments.
“Every child is an artist. The problem is how to remain an artist once he grows up.” – Pablo Picasso

Grinning crookedly from under his hat while dodging flying spray paint from one of Bansky’s wild graffiti murals next to him, Van Gogh dabbed more paint onto his swirly stars and mumbled in an indistinguishable European accent, "I muz tell my brudder, Theo, about dis new style of painting. I will call dis style dashes and dots."

Artists from different times and continents collided providing this rare glimpse of Van Gogh and Bansky working side by side. This was a result of our culminating Art Museum where we explored art through time, guided by the question, “How do artists communicate their thoughts and feelings?”

We began exploring the question: How do artists communicate their thoughts and feelings? with a Silent Gallery Walk in which the students used the thinking routine Same-Same-Different comparing and contrasting art from different periods. The first step to answer our driving question came by studying artists from the ancient world. We examined how global indigenous people created cave paintings to express what they most thought about: hunting. Students analyzed local pictographs (Chumash Painted Cave) and global pictographs (cave in Lascaux, France.) We discussed how ancient artists made their paints using the thinking routine See-Think-Wonder to deepen our conversations. We brought materials into our classrooms from the natural world (charcoal, paprika, cumin, acai tea) creating our own paints just as ancient artists did. Children used these typical pigments to paint images (chumash symbols, hunting poses, animals) on stones that later decorated our campus.

Next, we traveled thousands of years ahead to the the Renaissance period. We examined a timeline as a reference so students could see we were jumping thousands of years ahead from studying cave paintings (16,000 BC) to the Renaissance (1350 AD).

While navigating nonfiction articles, students learned that artists at this time expressed their Christian beliefs, the dominant religion in Italy. Lastly, we discussed how the human body has always been a favorite subject of painters, even though it made them giggle at first.

Students realized that artists worked tirelessly to get the human body anatomically correct, hence the work of the most famous Renaissance Master, Leonardo da Vinci.
During our Renaissance study, we used another thinking routine, Think-Extend-Challenge, which helped students look at art with the eye-of-an-artist, creating a need for art vocabulary developed during the Renaissance (sfmato, perspective, etc.) The students’ conversations were rich and inspiring! We explored the Renaissance deeper with a Webquest, books from the local library, and powerpoint presentations. We explored our own creativity, inventing new machines, inspired by da Vinci, presenting these in a “Invention Convention” for our peers. We also took a guided field trip to the Santa Barbara Museum of Art.

We left Renaissance, the period of realism, and jumped centuries ahead to Impressionism (time of Monet) and Post-Impressionism (time of Van Gogh). These periods valued perspective and insight over accuracy and detail. Students were shocked by the contrasting looks of Impressionism v. Realism. For weeks they had learned to see the beauty and value in a scientific manner of painting. Students learned about Monet’s love of shadows, Renoir’s portrayal of socialites, Degas’ beloved ballerinas, and Van Gogh’s use of dashes. We used the thinking routine, What-Will-You-Remember to discuss their first impressions. Students loved practicing Monet’s lily pad paintings using quick brushstrokes, loosely mixed colors, and focusing on movement. No longer was the priority on drawing the best human figure, but was instead about expression.

After studying art from the Lascaux cave paintings to Van Gogh’s Starry Night, the students were ready to see some of these paintings for themselves...off we went to the Getty Center. It became obvious these students had become serious artists over these last couple months as we walked past the first statue at the Getty, a naked man, and no one laughed. Instead, they seemed to understand that this statue signified this field trip would be filled with fine art worthy of honor and awe. As we arrived at the Impressionism wing the students walked as quickly as guards would allow toward Monet’s works of arts. They oohed and ahhed and loudly whispered naming paintings we had studied in class. One student even gave a random visitor to the museum some background information about Monet, impressive knowledge offered by a 9-year-old.

Next, we moved decades ahead to Modern art, learning how those artists communicated their thoughts and feelings. We learned that Modern Art encompasses a wide variety of movements, such as abstract, Cubism, Expressionism, Pop Art, Futurism, Fauvism, and sculpture. We took a field trip to the Santa Barbara Museum of Contemporary Art to explore contemporary art; children completed field guides to deepen their learning on each trip. We studied artists like Kandinsky, Munch, and Chagall. Inspired by Picasso; we created pieces of Cubism, integrating Geometry concepts.

After all our research, visits to museums, and practicing techniques from different styles, students were ready to share their knowledge and skills with the public. These artists and art history experts hosted an Art Museum for the entire school. Each student performed as an artist of their choice, shared their knowledge, and created a replica of one of their artist’s famous works (performing with 50% of their work completed beforehand, so the audience could watch “masters at work”.) To prepare for their performance, children collected nonfiction books and articles, completed internet research, watched biographies, and wrote thesis-driven five-paragraph informative essays. Students used their research papers to help prepare speeches on notecards. It was magical watching kindergartners to adults learn from these master artists.

This project was the most inspiring that we as teachers have taught. Children still talk about it now, a year later, discussing facts or art with artistic vocabulary from the periods studied. This project is easily adaptable to fit grade levels K-12. Nonfiction articles and writing assignments can easily be geared to fit any age of learner, and as we often did, can be modified to fit any type of learner as well, giving students with learning challenges full access and participation throughout the project.
Students at Santa Barbara Contemporary Art Museum participating as the docent lead a discussion on each art piece.

Students excited to see hanging 3D paper sculptures and learning it’s art.

Art posters were hung around the classroom for students to compare and contrast on a note taking guide called, Same Same Different.

Student practicing the technique of sfmato.
<table>
<thead>
<tr>
<th>Student making cave art using natural materials.</th>
<th>Mind Map to connect ideas and information visually.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student art portfolio.</td>
<td>Art Museum patrons wore a necklace shaped as an artist palette. Each presenter provided a colored sticker coded to the artist time period. Patrons were encouraged to learn about artists from every time period represented.</td>
</tr>
</tbody>
</table>
3rd grade “Andy Warhol” created this piece himself.

A 3rd grade “Claude Monet” paints “en plein air”. We enjoyed watching the artist at work.

4th grade “Van Gogh” takes a break from finishing “his” artwork to discuss the life of an Impressionist artist.

4th grade “Jackson Pollock” doesn’t seem to mind a mess.
<table>
<thead>
<tr>
<th>3rd grade “Mary Cassatt” loves painting outdoors and especially loves her pastels.</th>
<th>3rd grade “Andy Warhol” was having a bad hair day, but was excited to share his love of Campbell’s soup!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students taking the tram ride up to the Getty Museum.</td>
<td>Students bonding over the love of art after a filling lunch.</td>
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</table>
Field Work Guide for the Getty

Field Guide
The Getty Center
By: _______________________

Artwork I’ve seen before today:

<table>
<thead>
<tr>
<th>Artist</th>
<th>Name of Artwork</th>
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</tbody>
</table>

Artwork I saw today for the first time and want to learn more about:

<table>
<thead>
<tr>
<th>Artist</th>
<th>Name of Artwork</th>
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<tbody>
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</tbody>
</table>

Choose any one piece of art that really spoke to you today. Sit quietly in front of that piece of art for few moments by yourself. Then do the thinking activity Colors, Shapes, Lines:

<table>
<thead>
<tr>
<th>Colors</th>
<th>Shapes</th>
<th>Lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>What colors do you see? Describe them?</td>
<td>What shapes do you see? Describe them.</td>
<td>What kind of lines do you see? Describe them.</td>
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</table>

Thinking Routine:
What will you remember about the Getty Museum?
___________________________________________________________________________________________________
A culminating Art piece
A Day at the Museum!

Please note: There are only four “at home” pieces, which are highlighted (library, print an article, print an image, type paper.)

Artist Research Project

We have learned about art over time including cave art, Renaissance, Impressionism, Post-Impressionism, Modern, Pop, and Contemporary. We have learned about many artists and practiced their techniques using different mediums. We have analyzed art for the elements, principles of design, and interpretation of the meaning. We have been inspired at school, The Getty, SB Art Museum, and SB Contemporary museum. Now it is your turn to learn more about an artist that interests you and share your knowledge. As a class we decided to host an art museum where we become an artist of your choice! You will dress as your artist, paint or create a replica of one of their famous works, and share with others.

Materials needed:
- Research materials – at least one book and one online informative piece
  - Costume
  - Canvas
  - Art Supplies

Project Directions

1. **CHOOSE:** Choose an artist you want to know more about – look through your art binder for notes about artists or choose a new artist from an era we have studied.

2. **LIBRARY:** Get at least 2 resources (more is great) about the artist to bring to class
  - a book you can read
  - online information (biography or interview, analysis of art piece)

3. **RESEARCH:** Read your resources and take notes about the artist

4. **WRITING:** Write a research paper using the guidelines on page 3

5. **ART:** Complete 50% of a replicated or inspired art piece from your artist – you will finish the piece during the museum so people can see the artist at work!

6. **COSTUME:** Put a costume together

7. **NOTECARDS:** Write notecards about the artist for the presentation. Presentation should be 1-2 min in length.

8. **PRINT:** Print one or two famous images created by the artist to use as visuals

Scoring Rubric

<table>
<thead>
<tr>
<th>Components</th>
<th>Title ___________________________</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word count (500 +)</td>
<td>The assignment is typed</td>
<td>5</td>
</tr>
<tr>
<td>Spelling</td>
<td>All words are correctly spelled</td>
<td>10</td>
</tr>
<tr>
<td><strong>Usage (grammar)</strong></td>
<td>Sentences make sense and there is an increasing awareness of correct Grammar usage (sentence construction)</td>
<td>10</td>
</tr>
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<td>---------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td><strong>Punctuation</strong></td>
<td>A correct use of periods, commas, exclamation, speech and question marks</td>
<td>10</td>
</tr>
<tr>
<td><strong>Capitalization</strong></td>
<td>Words are correctly capitalized (common and proper nouns)</td>
<td>5</td>
</tr>
<tr>
<td><strong>Vocabulary</strong></td>
<td>Art Vocabulary is used! Sfmato, perspective, one point perspective, foreshorten, balance, proportion, unity, value, color, hue, light, line, diagonal, horizontal, vertical, shape, tache brushtroke, chiaroscuro...</td>
<td>10</td>
</tr>
<tr>
<td><strong>Paragraph 1</strong></td>
<td>Hook/Question to engage your reader</td>
<td>10</td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>Did you know _____? Have you ever _____?</td>
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<tr>
<td></td>
<td><strong>Mini Overview of Artist</strong></td>
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<tr>
<td></td>
<td><em>For anyone who doesn’t know who (artist) is, he is a (type of art) artist who lived from (life dates).</em></td>
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<tr>
<td></td>
<td><strong>Thesis Statement</strong></td>
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<tr>
<td></td>
<td>Possible Thesis Statements:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Some people may think _____ art is ___<em><strong>, but I think <em><strong><strong>’s art is</strong></strong></em></strong></em>.</td>
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<tr>
<td></td>
<td>2. _____ <em>is an (interesting, important,</em></td>
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<tr>
<td>Paragraph 2</td>
<td>Topic Sentence: One reason _______ is an (interesting) artist is because of their life/career. List 3 to 5 detail sentences to support topic sentence</td>
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<tr>
<td>---</td>
<td>---</td>
<td></td>
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<tr>
<td>Biography about life/career</td>
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</tr>
<tr>
<td>Paragraph 3</td>
<td>Topic Sentence: Another reason _______ is an (interesting) artist is because of their techniques/influence. List 3 to 5 detail sentences to support topic sentence</td>
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<tr>
<td>Techniques/influence</td>
<td></td>
<td></td>
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<tr>
<td>Paragraph 4</td>
<td>Topic Sentence: Finally, _______ art piece (Title of art) is (interesting, important, influential) because ___________. List 3 to 5 detail sentences to support topic sentence (consider elements (line, color, etc.), design (perspective, balance, etc.), and/or new ideas for art at that time.</td>
<td></td>
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<tr>
<td>Analyze art for design and/or elements</td>
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<tr>
<td>Paragraph 5</td>
<td>Restate Thesis: As you can see, _______ is an (interesting, important, influential) artist because of their career/life, techniques/influence, and _______. How this artist impacted your view on art Connection to today: This artist’s influence is still seen today</td>
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<tr>
<td>Closing</td>
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<tr>
<td>Examples of possible Artists</td>
<td></td>
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<td>-----------------------------</td>
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<tr>
<td><strong>Ancient Artists</strong></td>
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<tr>
<td>Chumash Native Americans</td>
<td></td>
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<tr>
<td>French Cave Artists</td>
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<tr>
<td><strong>Renaissance</strong></td>
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<tr>
<td>Leonardo Da Vinci</td>
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<tr>
<td>Michelangelo</td>
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<tr>
<td>Botticelli</td>
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<tr>
<td>Raphael</td>
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<tr>
<td>Titian</td>
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<tr>
<td><strong>Impressionism</strong></td>
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<tr>
<td>Monet</td>
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<tr>
<td>Van Gogh</td>
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<tr>
<td>Turner</td>
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<tr>
<td>Cezanne</td>
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<td>Degas</td>
<td></td>
<td></td>
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<tr>
<td>Gauguin</td>
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<td></td>
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<tr>
<td><strong>Modern</strong></td>
<td></td>
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<tr>
<td>Jackson Pollock</td>
<td></td>
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<tr>
<td>Henri Matisse</td>
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<tr>
<td>Pablo Picasso</td>
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<tr>
<td>Henri Toulouse-Lautrec</td>
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<tr>
<td>Vincent van Gogh</td>
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<tr>
<td>Marc Chagall</td>
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<tr>
<td>Edvard Munch</td>
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<tr>
<td><strong>Pop</strong></td>
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<tr>
<td>Andy Warhol</td>
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<td>Roy Lichtenstein</td>
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<td>Jasper Johns</td>
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<tr>
<td>Eduardo Paolozzi</td>
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</tr>
<tr>
<td>Richard Hamilton</td>
<td></td>
<td></td>
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<tr>
<td>Robert Rauschenberg</td>
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</tbody>
</table>
Daily Work Ethic Rubric

Name: __________________________ Date: ______________

My Work Ethic

<table>
<thead>
<tr>
<th></th>
<th>3 Almost Always</th>
<th>2 Sometimes</th>
<th>1 Almost Never</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I used resources to find information I needed.</strong> <em>(Little teacher help)</em></td>
<td></td>
<td></td>
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<tr>
<td><strong>I stayed on task.</strong> <em>(Began work right away and conversations were about the task/concept)</em></td>
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<tr>
<td><strong>My behavior helped the group.</strong> <em>(Positive attitude, listen and respond, appropriate use of humor, stayed present)</em></td>
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<tr>
<td><strong>I had a meaningful contribution.</strong> <em>(I gave and received support. There was shared responsibility)</em></td>
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<tr>
<td><strong>I did my best work.</strong> <em>(Effort and ability)</em></td>
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Comments:

____________________________________________________________________________
____________________________________________________________________________

106
## SELF-REFLECTION ON LEARNING

Spend a few minutes to analyze your performance on crew and individual tasks.

<table>
<thead>
<tr>
<th>Name:</th>
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<table>
<thead>
<tr>
<th>Project Name:</th>
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<table>
<thead>
<tr>
<th>Describe the project in a sentence or two:</th>
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<table>
<thead>
<tr>
<th>What big idea(s) did this project help you understand about art and your artist?</th>
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<table>
<thead>
<tr>
<th>What do you wish you had done differently:</th>
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<table>
<thead>
<tr>
<th>What part of the project did you do your best work on:</th>
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<table>
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<tr>
<th>What was the most enjoyable part of this project:</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>How could your teacher(s) change this project to make it better next time:</th>
</tr>
</thead>
</table>
Listed below are the 3rd and 4th grade standards covered in Visual Arts, Languages Arts (Reading, Writing, Listening/Speaking), and Math

**Visual Art Grades 3 & 4**

**Visual Arts Grade Three**

1.0 ARTISTIC PERCEPTION

Processing, Analyzing, and Responding to Sensory Information Through the Language and Skills Unique to the Visual Arts

Students perceive and respond to works of art, objects in nature, events, and the environment. They also use the vocabulary of the visual arts to express their observations.

*Develop Perceptual Skills and Visual Arts Vocabulary*

1.1 Perceive and describe rhythm and movement in works of art and in the environment.

1.2 Describe how artists use tints and shades in painting.

1.3 Identify and describe how foreground, middle ground, and background are used to create the illusion of space.

1.4 Compare and contrast two works of art made by the use of different art tools and media (e.g., watercolor, tempera, computer).

*Analyze Art Elements and Principles of Design*

1.5 Identify and describe elements of art in works of art, emphasizing line, color, shape/form, texture, space, and value.

2.0 CREATIVE EXPRESSION

Creating, Performing, and Participating in the Visual Arts

Students apply artistic processes and skills, using a variety of media to communicate meaning and intent in original works of art.

*Skills, Processes, Materials, and Tools*

2.1 Explore ideas for art in a personal sketchbook.

2.2 Mix and apply tempera paints to create tints, shades, and neutral colors.

*Communication and Expression Through Original Works of Art*

2.3 Paint or draw a landscape, seascape, or cityscape that shows the illusion of space.

2.4 Create a work of art based on the observation of objects and scenes in daily life, emphasizing value changes.

3.0 HISTORICAL AND CULTURAL CONTEXT

Understanding the Historical Contributions and Cultural Dimensions of the Visual Arts

Students analyze the role and development of the visual arts in past and present cultures throughout the world, noting human diversity as it relates to the visual arts and artists.

*Role and Development of the Visual Arts*
3.1 Compare and describe various works of art that have a similar theme and were created at different time periods.

3.3 Distinguish and describe representational, abstract, and nonrepresentational works of art.

Diversity of the Visual Arts
3.4 Identify and describe objects of art from different parts of the world observed in visits to a museum or gallery (e.g., puppets, masks, containers).

4.0 AESTHETIC VALUING

Responding to, Analyzing, and Making Judgments About Works in the Visual Arts

Students analyze, assess, and derive meaning from works of art, including their own, according to the elements of art, the principles of design, and aesthetic qualities.

Derive Meaning
4.1 Compare and contrast selected works of art and describe them, using appropriate vocabulary of art.

Make Informed Judgments
4.3 Select an artist’s work and, using appropriate vocabulary of art, explain its successful compositional and communicative qualities.

Visual Arts Grade Four

1.0 ARTISTIC PERCEPTION

Processing, Analyzing, and Responding to Sensory Information Through the Language and Skills Unique to the Visual Arts

Students perceive and respond to works of art, objects in nature, events, and the environment. They also use the vocabulary of the visual arts to express their observations.

Develop Visual Arts Vocabulary
1.1 Perceive and describe contrast and emphasis in works of art and in the environment.
1.2 Describe how negative shapes/forms and positive shapes/forms are used in a chosen work of art.
1.3 Identify pairs of complementary colors (e.g., yellow/violet; red/green; orange/blue) and discuss how artists use them to communicate an idea or mood.
1.4 Describe the concept of proportion (in face, figure) as used in works of art.

Analyze Art Elements and Principles of Design
1.5 Describe and analyze the elements of art (e.g., color, shape/form, line, texture, space, value), emphasizing form, as they are used in works of art and found in the environment.

3.0 HISTORICAL AND CULTURAL CONTEXT

Understanding the Historical Contributions and Cultural Dimensions of the Visual Arts

Students analyze the role and development of the visual arts in past and present cultures throughout the world, noting human diversity as it relates to the visual arts and artists.

Role and Development of the Visual Arts
3.1 Describe how art plays a role in reflecting life (e.g., in photography, quilts, architecture).

4.0 AESTHETIC VALUING
Responding to, Analyzing, and Making Judgments About Works in the Visual Arts

Students analyze, assess, and derive meaning from works of art, including their own, according to the elements of art, the principles of design, and aesthetic qualities.

Derive Meaning

4.1 Describe how using the language of the visual arts helps to clarify personal responses to works of art.

4.3 Discuss how the subject and selection of media relate to the meaning or purpose of a work of art.

Make Informed Judgments

4.4 Identify and describe how various cultures define and value art differently.

4.5 Describe how the individual experiences of an artist may influence the development of specific works of art.

5.0 CONNECTIONS, RELATIONSHIPS, APPLICATIONS

Connecting and Applying What Is Learned in the Visual Arts to Other Art Forms and Subject Areas and to Careers

Students apply what they learn in the visual arts across subject areas. They develop competencies and creative skills in problem solving, communication, and management of time and resources that contribute to lifelong learning and career skills. They also learn about careers in and related to the visual arts.

Careers and Career-Related Skills

5.4 Read biographies and stories about artists and summarize the readings in short reports, telling how the artists mirrored or affected their time period or culture.

3rd Geometry

Reason with shapes and their attributes.

1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Grade 3 Language Arts

<table>
<thead>
<tr>
<th>CCS Standards: Reading – Informational Text</th>
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</thead>
<tbody>
<tr>
<td>RI.3.1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.</td>
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<tr>
<td>RI.3.2. Determine the main idea of a text; recount the key details and explain how they support the main idea.</td>
</tr>
<tr>
<td>RI.3.3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time,</td>
</tr>
</tbody>
</table>

110
sequence, and cause/effect.

**RI.3.4.** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 3 topic or subject area.*

**RI.3.5.** Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.

**RI.3.7.** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

**RI.3.8.** Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).

**RI.3.9.** Compare and contrast the most important points and key details presented in two texts on the same topic.

**RI.3.10.** By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2–3 text complexity band independently and proficiently.

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**Standards: Writing**

**W.3.1.** Write opinion pieces on topics or texts, supporting a point of view with reasons.
   a. Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons.
   b. Provide reasons that support the opinion.
   c. Use linking words and phrases (e.g., *because, therefore, since, for example*) to connect opinion and reasons.
   d. Provide a concluding statement or section.

**W.3.2.** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
   a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.
   b. Develop the topic with facts, definitions, and details.
   c. Use linking words and phrases (e.g., *also, another, and, more, but*) to connect ideas within categories of information.
   d. Provide a concluding statement or section.

**W.3.4.** With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
### W.3.5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.

### W.3.7. Conduct short research projects that build knowledge about a topic.

### W.3.8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

### W.3.10. 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.

### CCS Standards: Speaking & Listening

**SL.3.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others’ ideas and expressing their own clearly.

**SL.3.2.** Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

**SL.3.4.** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

**SL.3.6.** Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

### GRADE 4 Language Arts

#### CCS Standards: Reading – Informational Text

**RI.4.1.** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

**RI.4.2.** Determine the main idea of a text and explain how it is supported by key details; summarize the text.

**RI.4.3.** Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

**RI.4.4.** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4* topic or subject area.
**RI.4.5.** Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.

**RI.4.7.** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

**RI.4.9.** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

**RI.4.10.** By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.

### Standards: Writing

**W.4.2.** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

- Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
- Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
- Link ideas within categories of information using words and phrases (e.g., *another, for example, also, because*).
- Use precise language and domain-specific vocabulary to inform about or explain the topic.
  
Provide a concluding statement or section related to the information or explanation presented.

**W.4.4.** Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.

**W.4.5.** With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.

**W.4.7.** Conduct short research projects that build knowledge through investigation of different aspects of a topic.

**W.4.8.** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.

**W.4.9.** Draw evidence from literary or informational texts to support analysis, reflection, and research.

- Apply grade 4 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text”).

**W.4.10.** 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.
<table>
<thead>
<tr>
<th>CCS Standards: Speaking &amp; Listening</th>
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</thead>
<tbody>
<tr>
<td><strong>SL.4.1.</strong> Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <em>grade 4 topics and texts</em>, building on others’ ideas and expressing their own clearly.</td>
</tr>
<tr>
<td><strong>SL.4.2.</strong> Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.</td>
</tr>
<tr>
<td><strong>SL.4.3.</strong> Identify the reasons and evidence a speaker provides to support particular points.</td>
</tr>
<tr>
<td><strong>SL.4.4.</strong> Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.</td>
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</table>
The ability to foster student engagement continually surfaces as arguably the most important element of excellent teaching. Especially with the new demands of Common Core State Standards, which emphasize such elements as thesis statements and argumentation, citations and media literacy, teachers are faced daily with the realization that they need to inspire in the student a “leaning in” and an engagement in order to lead students to a greater depth of knowledge. Secondary teachers especially feel this challenge as they vie for their students’ attention, compete with media-driven sound bites, and seek to make any content relative to their world and experience.

With these challenges in mind, we developed an engaging, relevant, and fun way to not only address the skills, standards and content of our prospective subjects (5-8th History/Social Studies), but also incorporate visual and performing arts, technology, engineering, English Language Arts, and geography. The students also learned important collaboration, communication and group self-regulation since these learning opportunities happened in small heterogeneous groups and included intentional instruction in group skills and assessment.

Using the idea of the popular television show “The Amazing Race,” students were introduced to the different geographical areas to be studied that year in their Social Studies class as teams “raced” through different countries (ancient empires). The lessons and activities mimicked elements of the television show, as described in the following:

Lessons and Activities (See attachment for supporting educational materials)

Launch Activity: Teams were given the task of designing their own car in a STEM-inspired design/engineering challenge involving creating a wind-powered car using only a piece of paper, straws, pins, and four Lifesavers.

Annotated Map: Artistic representation of the country, including geographical terms, symbols, and biomes collected on a Google Form worksheet called “Where in the World?”

Significant Person and Landmark Writing Assignment: Each team member was assigned a significant person from that country and corresponding artifact or historical place, such as Confucius and The Analects.

Roadblock Trivia Challenge: (includes instruction in and differentiation of primary and secondary resources): Initial research.
Backpack Challenges: Lighthearted challenges simulating that contestants had backpacks and sometimes needed to problem-solve different situations on the road during the race. These short “minute to win it” - type challenges kept the students engaged and added fun to the team challenge.

Intersection: Dramatic Challenge: Students were assigned a folk story from their country. They had to decide how to present the story dramatically. Choices included tableaux, puppet show, interpretive dance, skit, or readers’ theater.

Virtual Tour on Tour Builder: Team created a virtual tour in a Google Earth-type online website depicting their assigned country, consolidating significant persons, artifacts/places, and narration.

Optional Extra Credit Assignments: Inspired Art, Online Art Gallery, Travel Journal, and Poetry

Culminating Activity: Creating an Edible Car; Another STEM-inspired design/engineering challenge, this time involving designing a car with entirely edible materials.

Best Practices and Adaptability:

ELA Common Core Standards are embedded within the social studies classroom.

Technology such as student-made Google Tour Builder virtual field trips demonstrate student learning.

Relatable context of reality television show engenders student engagement and active participation in the learning process.

21st Century Learning Skill of Collaboration emphasized due to extensive group work, group reflections, and social-emotional instruction about effective group work.

Activity-based learning with students at the center of the learning process.

Variety of modalities represented across the unit (visual, verbal, artistic, inter/intrapersonal).

While this unit explores an overview of countries and/or ancient empires to be studied, it could easily be adapted to other social studies curriculum, i.e. Racing through the Renaissance or Racing through the Revolution. The assignments sheets provided could be easily changed to reflect any history content. Similarly, the science teacher could have teams race through taxonomy or the elemental chart. The language teacher could lead teams to race through vocabulary and grammar exercises. P.E. teachers could have student team race through skills or game rules.

Assessment of Student Achievement and Success of the Curriculum (See attachment)

Each activity that is meant to display student learning is assessed by a rubric. Students were assessed by the teacher for each assignment with a rubric (map, geotour, significant person/landmark, dramatic presentation). Rubrics included categories of completion/following directions, presentation, and quality of writing. For each group challenge activity (Roadblocks/Detours), points were earned toward a running tally for the competition. Students were assessed on participation and group work, both by their teacher and as a self-evaluation.

Common Core Standards Addressed:

The project spanned 4 grade levels (5-8) and addressed many Common Core Standards in each grade level, all of which are also College and Career Readiness Anchor Standards.
ELA

- Reading Informational Text
- Key Ideas and Details-Standard 1, 2, 3
- Integration of Knowledge and Ideas - Standard 8

Writing

- Text Types and Purposes-Standard 2, a, b, d, f,
- Production and Distribution of Writing- Standard 6
- Research to Build and Present Knowledge- Standards 7-9

Speaking and Listening

- Comprehension and Collaboration-Standards 1-2
- Presentation of Knowledge and Ideas-Standards 4-6

Reading Standards for Literacy in History/Social Studies

- Integration of Knowledge and Ideas: Standard 7

Technology Opportunities

- Tour Builder/Google Maps
- Online research
- Google Drive- shared documents
- Edmodo/Schoology
Edible Car Challenge
Build together and race -10 points

Your team is to construct a car made entirely of edible materials! The winner is the car that passes the finish line in the least amount of time. Your car will be the only car on the track. The track will be at an angle.

Entries must have two axles and four wheels.
Entries must be composed entirely of food items edible to humans. (No toothpicks, for example)
Entry must fit on the race track.
The car will not be pushed. It will be ‘let go.’ There will be a board that will be lifted, and hopefully your car starts moving!
Backpack:
Your team needs to choose what to pack for your adventure! Fill your backpack with 10 of the following items. Each week your team will roll a die. Depending on the number rolled, a scenario will occur. Each card describes a situation where an item is used. Some items/cards will offer a bonus, while others may incur a penalty. Choose wisely.

You may choose 10 items:
1. sleeping bag
2. compass
3. map
4. candy bar
5. deck of cards
6. shrunken head
7. harmonica
8. mp3 player
9. paper and pen
10. wet wipes
11. headlamps
12. first aid kit
13. venus flytrap
14. magnifying glass
15. spy camera
16. rope
17. duck tape
18. gum
19. box of assorted buttons
20. decoder ring

template for backpack:


Image search on google brought up many options
**Fate Cards: choose a number!**

1. You are lost in a sandstorm. Map or Compass = no penalty, Map + Compass = bonus

2. You made it to the airport, unfortunately, the next flight does not leave for 17 more hours. Luckily, you brought a sleeping bag. You are well rested for the next challenge. = bonus

3. Boat ride up the river is full, use a candy bar to bribe your way on. No candy= penalty

4. Local customs prohibit gambling, if you have a deck of cards, you suffer a penalty.

5. Local recognizes your shrunken head necklace as a long lost ancestor. They befriend you and show you a shortcut to the next destination. Necklace = bonus

6. Your team is feeling blue. Pull out harmonica to give everyone a boost. Bonus on your next detour.

7. No cell service where you are! You have to stop and ask for directions, but they are complicated. Bonus if you have paper and pencil, penalty if you do not.

8. A challenge involves making a good impression, and your team is stinky and looks like a mess! Bonus if you have wet wipes, penalty if you do not.

9. Lost your keys in the dark. Bonus if you have a headlamp, penalty if you do not.

10. A team member fell off her bike. Bonus if you have a first aide kit, penalty if you do not.

11. You are overrun by a swarm of mosquitoes! Luckily, your amazing Venus Flytrap can catch them all. Bonus if you have the flytrap, penalty if not.

12. The door to the Pharoah’s palace is locked, but there is a secret code written above the lock. If you have the decoder ring, you can read it and successfully open the door.- bonus! If no ring, no entry- penalty.

13. Your backpack breaks. Luckily, you have duck tape and/or rope to fix it- bonus. No duct tape= all your stuff falls out.

14. The local authorities accuse you of speeding. You have caught it all on film in your spy camera. The evidence cannot be disputed, bonus if you have the camera, penalty if you do not.
15. You have a very tiny map to help you get to your next destination. It is so small, you cannot read the writing. Bonus if you have the magnifying glass, penalty if you do not.

16. Your teammate breaks the button on his/her last clean shirt. You are expected at a formal dinner in 10 minutes (not enough time to get a new one). Bonus if you have the box of buttons, penalty if you do not.

17. Your team lost your toothbrushes. Luckily, you brought gum! Bonus if you have it, penalty if you do not.
Roadblock: Trivia Challenge Round 1
Oceans, Continents, Hemispheres

1. What are the names of the 4 major Oceans?
2. Locate ____________ ocean on the map. (repeat 4 times with blank map on overhead)
3. What are the names of the 7 continents?
4. Locate ____________ continent on the map. (repeat 7 times with blank map on overhead)
5. Name the 4 hemispheres of the earth.
6. Locate and name a continent in the southern hemisphere. (can be repeated with each hemisphere).

Roadblock: Trivia Challenge Round 2
Countries and Rivers.

1. This country is located Africa. The Nile River runs through it.
2. This country/empire in located in modern day Iraq and Syria. The Tigres river runs through it.
3. This country is located in Asia. The Ganges river runs through it.
4. This Empire is bordered by the Mediterranean Sea to the South.
5. This empire includes the Yellow River and the Himalayas.
6. The pope lives in the modern day capital of this ancient empire.
7. This empire is bordered by the Red Sea and Persian Gulf.

Roadblock: Trivia Challenge Round 3
Wildcard- anything goes!
1. Find the continent located at 35 degrees S and 140 degrees E.
2. Name and find the tallest mountain in North America.
3. What is the name of the longest mountain range in South America?
4. If you were standing here, any direction you turn would be south.
5. Penguins are only found in this hemisphere.
6. What does a compass rose show?
7.
Detours

| The As Have It |
| Bee Prepared |
| C to Shining C |
| Deep and Wide |
| Eeeeeeeek |
| Find a City |

The As Have It: Using the resource at [http://www.enchantedlearning.com/geography/glossary/](http://www.enchantedlearning.com/geography/glossary/) find the nine geography terms that begin with A. Study these terms for 10 minutes, and get ready for a pop quiz. Each member will be given the quiz.

Bee Prepared: Using the map found at [http://honeybeenet.gsfc.nasa.gov/Honeybees/Forage.htm](http://honeybeenet.gsfc.nasa.gov/Honeybees/Forage.htm) (and any other map you might need) answer the following questions:

1.) What is this map about?
2.) How many regions are there?
3.) What are the names of the four regions found in California?
4.) Name all of the states and the three districts of Canada that are in the Great Plains Region.
5.) I am a bee. I am NOT in the New England and Atlantic Canada Region. I am NOT in one of the thirteen original colonies. I am NOT in a US Swing State. Every bee from my state is in the same region. It is now narrowed down to three states- which three states? You have 15 minutes. Write your answers on a piece of paper.

C to Shining C: Using the glossary found at [http://www.enchantedlearning.com/geography/glossary/](http://www.enchantedlearning.com/geography/glossary/) find 12 terms that have to do with water. Demonstrate what they mean with an interpretive dance, demo, or other physical representation using only your bodies. You will present them to the class. You have 15 minutes. Points are awarded for creativity and completeness.
Deep and Wide: Using any resource at your disposal in the room, EXCEPT the Internet, find out the five oceans of the world. Also find out and memorize the names and places of four rivers and five lakes in the US. Memorize quickly where they are. You will be tested in fifteen minutes by filling in the ocean names in a blank world map.

Eeeeeeek: Read about a disgusting bug here: http://mag.amazing-kids.org/ak_columns/sci-tech-kids/the-world%E2%80%99s-most-disgusting-bug/. Where is it from? Find a map of that place online. Draw a rough sketch of that place. Label 10 cities, one ocean, one channel, and five rivers. You have fifteen minutes. Points will be given for completeness, accuracy, and some semblance of neatness. (It's a quick sketch, but it should not look like the pencil was between your toes.)

Find a City: Find a name of a state for each letter of the alphabet. If there is no state, find a city name. List them neatly on one piece of paper in alphabetical order. You have 15 minutes. Points will be given for completeness, accuracy, and neatness.
Name: _____________________________
Team: _____________________________

**Teamwork Check In**

As a team member, rate yourself on the following
1= terrible - 5= totally awesome

<table>
<thead>
<tr>
<th>BEHAVIOR</th>
<th>RATING 1-5</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>I listen to and consider other’s ideas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I contribute my own ideas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I stay on task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use positive language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I help everyone to understand and participate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Check those that apply to you:

I am usually the group leader. _____________________________

I mostly listen and follow along: _____________________________

I am not a leader or follower: _____________________________

Finish this sentence:

During this project, I want to work on being a better teammate by _____________________________

One way I can start do this is _____________________________

______________________.
Group: ________________________________

Group Work Rubric
Points possible in each category

| Communication | Each member contributes to the conversation, especially when it comes to work delegation and work product decisions. Conversation is constructive and respectful. All necessary communication happens within the group. Problems with a member are addressed to the member directly. Each member voices their needs and requests. |
| Support       | Members realize individual strengths and weaknesses. Members encourage and support each other. Members hold each other accountable in a respectful way. |
| Sportmanship  | While enjoying a healthy sense of competition, members are respectful and encouraging to other teams. Members refrain from unkind comments, play within the rules, and avoid over-celebrating. |

Total: ___/___

Comments:
Extra Credit Opportunities

1. Art- Create an online art gallery using Prezi or Google Presentations. Feature ten (10) prominent art pieces from the area. Write an informative caption (one to three paragraphs) explaining the significance of the piece. Include such facts as name, artist, and medium, but make sure you convey why it is significant. An amazing, point-winning art gallery has a well-balanced collection of pieces that have a common theme, tell a story, depict a certain region or time period, etc. In other words, it is not a random collection of pieces of art.

2. Art- Using a significant art piece from your country as inspiration, each member does their own version of the art piece. Each art piece is definitely inspired by the original, but has your original flair to it. Nicely matt each piece, with group name on the back and artist’s name on the lower left of the front. Restrictions: No downloading images and copying or tracing. No computer-generated art. All other media allowed. Must be two dimensional. (Some texture is fine. It needs to be able to be matted and hung.)

3. Writing- Write an imaginary travel journal from the point of view of a major historical person or a series of events. (See example) No restrictions in regard to time period. Journal must be historically accurate, i.e. do not fictionalize too much.

4. Writing- Write a poem (not acrostic) on any theme related to your assigned region. Have your theme approved before you write the poem.
Art Gallery Extra Credit Rubric
points possible in each category

<table>
<thead>
<tr>
<th>Completion</th>
<th>Gallery includes 10 art pieces, each accompanied by a caption one to three sentences in length.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>Captions show research into the art piece’s history and cultural significance, as well as factual information such as the time of creation, artist, and medium. Captions are clearly written and include no mistakes in capitalization, usage, punctuation, or spelling. Prezi or Google Presentation is neat and visually pleasing.</td>
</tr>
<tr>
<td>Creativity and Art selection</td>
<td>Art pieces are carefully selected to share a common theme, tell a story, or depict a region. Art pieces include many different mediums and artists.</td>
</tr>
</tbody>
</table>

Total: ___ /

Comments:
Group: ____________________________

**Inspired Art Extra Credit Rubric**
points possible in each category

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion</td>
<td>Art is neatly matted, with group name on back and the artist’s name in the lower lefthand corner. Art was not traced or computer-generated. Art is two-dimensionsal.</td>
</tr>
<tr>
<td>Quality</td>
<td>Art is carefully and thoughtfully done, with obvious time put into its creation.</td>
</tr>
<tr>
<td>Creativity and Art selection</td>
<td>Original art piece chosen has cultural significance. Though based on the original piece, the artist changes or adds to it in a thoughtful and meaningful way.</td>
</tr>
</tbody>
</table>

**Total:** ___/

Comments:
Travel Journal Extra Credit Rubric
Points determined by length

<table>
<thead>
<tr>
<th>Historical Information</th>
<th>Journal showcases historical information about the life of important person, including things like details about what life was like during the time period, biographical information, cultural and political significance, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>Writing is clear and written in first person. Author effectively uses the “voice” of the chosen person. Writing is creative and entertaining to read.</td>
</tr>
<tr>
<td>Grammar</td>
<td>Capitalization, usage, punctuation, and spelling are all correct.</td>
</tr>
</tbody>
</table>

Total: __/ 

Comments:
Sample Travel Journal

73 B.C.
Leaving Neapolis, I traveled north toward Capua. I am not very much interested in the perfume, for which it is known. I am on my way to Rome for business. It was a long 16 mile journey, and I almost wanted to spend the night in Beneventum, but I traveled on. As they say, *Appia teritur regina longarum viarum*. I am still amazed at the engineering feat of the Roman roads. It rained all day, but because of the foundation and the ditches, my horse did not sink or slip in the mud. The inns along the road were few and far between, and appeared very risky, not to mention filthy. Another reason to travel on to Capua.

Now I am sorry that I chose to travel on. A lice-ridden bed would have been better than this. The situation is dangerous here. Spartacus, possibly a former soldier in the Roman Army, escaped from the gladiator school here in Capua with 70 other gladiators. I overheard someone mention the name Crixis as his aide. Other slaves are joining them, taking up hiding at Mt. Vesuvius. The house slave of the innkeeper was among them. I am surprised a house slave revolted. A mine slave maybe, but a house slave? He had his own small garden behind his quarters, and his debt was almost paid. Anyway, rumor has it Spartacus is training the slaves how to fight. This can't be good.

72 B.C.

Well, I was right. Last year, Spartacus continued to train the slave army, with more slaves joining all the time. They plundered the surrounding areas. Thankfully I had left the area and gone on to Fundi. Currently I am in Rome. Last year the Roman Senate sent Clodius Glaber, the praetor, along with 3,000 to bring down the slave revolt. I saw the massive army march out. The slave army defeated the over confident Glaber and his troops. The victory has inspired even more slaves to join the revolt. They are now reported to be about 30,000 strong, although they have split up into ranks according to their natural languages. The latest Senate action is to send our two consuls, Gellius Publicola and Gnaeus Cornelius Lentulus Clodianus, each with two legions, to fight the rebel slaves.

71 B.C.

The slave revolt is finally over. Bodies now hang rotting along the Appian Way as a warning for others. I don't know when I will return to Neapolis. The roads do not seem safe, and I don't want to walk by all those bodies. Crassus, the supreme commander of the war, was appointed last year. Spartacus enjoyed a few victories, thanks to the pirates. However, after Crassus instituted the punishment of Decimation, the Roman soldiers started fearing Crassus more than Spartacus and his men. Turns out you never should trust a pirate, as they betrayed him in Sicily. Spartacus and his men were able to escape to Brundisium. Spartacus and his army were finally defeated at Silaurus, although we never found the body of Spartacus. Some 6,000 of the surviving members of the slave revolt now hang dead along the road, as I mentioned. Some 5,000 of the slaves got away, and the rest were destroyed by Pompey. Pompey takes all the credit for ending the Third Servile War. I think something is up with these two. The Senate better watch out.
Assorted Links
https://www.youtube.com/watch?v=eFUQUMy2SN4 opening theme song
http://honeybeenet.gsfc.nasa.gov/Honeybees/Forage.htm map bee activity
http://www2.ivcc.edu/mimic/nsf/middle%20school%20activities/stem%20activities%20handbook.pdf STEM activities

Websites for Ancient China
http://www.historyforkids.org/learn/china/history/
http://www.bcps.org/offices/lis/models/chinahist/dynasties.html
http://afe.easia.columbia.edu/timelines/china_timeline.htm
http://www.cultural-china.com/chinaWH/features/chinaoverview/
http://www.fcps.edu/KingsParkES/technology/ancient/china.htm
http://china.mrdonn.org/index.html
http://questgarden.com/147/04/9/121111081134/process.htm
http://www.unc.edu/~rwilkers/resource-china.htm Chinese stories

Websites for Saudi Arabia/Islam
https://www.saudiaramcoworld.com/issue/197003/saladin-story.of.a.hero.htm Saladin Muslims
World Cultures to 1500: Islam
Muslim Scientists And Islamic Civilization
Mr. Dowling’s Electronic Passport: Crusades and the Rise of Islam

Websites for Ancient Japan
http://www.pitt.edu/~dash/japan.html Japanese stories
http://www.pbs.org/empires/japan/
http://k12east.mrdonn.org/Japan.html
http://asianhistory.about.com/od/japan/p/ShogunJapanClass.htm
http://www.womeninworldhistory.com/sample-08.html
http://www.samurai-archives.com/
http://apg-sfusd-ca.schoolloop.com/medievaljc
History of the World Important Events in World History
ibiblio -- the Publics' Library (http://www.ibiblio.org/collection)

Exploring Ancient World Cultures (http://eawc.evansville.edu)

The Artist's view of World History and Western Civilization (http://history.evansville.net)

Discovery.com (http://www.discovery.com)

National Geographic (http://www.nationalgeographic.com)
Secrets of Lost Empires (http://www.pbs.org/wgbh/nova/lostempires)
Short History of Japan (http://www.openhistory.org/jhdp/intro/)
Ancient Japan (http://www.wsu.edu:8080/~dee/ANCJAPAN/ANJAPAN1.HTM)

Websites for Ancient Rome
http://rome.mrdonn.org/myths.html Roman stories
Illustrated History of the Roman Empire
Primary: The Romans
Who Were the Romans?
Digging Up the Romans
The Rome Project
Mr. Dowling's Electronic Passport: Ancient Rome
Amazing Race Launch Activity

Show video clip of opening https://www.youtube.com/watch?v=eFUGUMy2SN4 and car clip https://www.youtube.com/watch?v=bYagODijUS5g

Introduce teams. Use theme music as you display names or even pictures of students.

First Road Block: Amazing Race Car

Copy and pass out:

You and your team must create your car, your first mode of transportation to your first destination - the airport. You will be given and may use only the following:

- 4 Lifesavers
- 2 drinking straws
- 1 piece of paper
- tape
- 10 pins

You will “blow” your car from the start line to the finish line. Your team, taking turns blowing if you like, must be able to blow your car over the finish line within _________ seconds in order to win the five (5) Road Block Points and avoid getting a Speed Bump. You will have _________ minutes to complete this task.

Other materials needed:

Track with “start” and “airport” marked. Distance to be determined.
Welcome to The Amazing Race: Ancient Civilizations

Over the next 3 1/2 weeks, you and your teammates will be “racing” around a country to find out about its geography, landmarks, people, and accomplishments. Along the way, you will be asked to perform group and individual tasks for your team. Each team who successfully completes the race wins the ultimate prize: a virtual journey through the Medieval Period.

Our race is loosely based on the show, The Amazing Race. During each leg of the race, you and your team will be asked to perform a Detour (group challenge) and a Roadblock (individual challenge), along with the assigned tasks.

- Amazing Car Race
- Where in the World? worksheet (team)
- Map (team)
- Road block trivia challenge part 1 (one person)
- Significant Person or Landmark (individual)
- Backpack Challenge (team)
- Intersection: teams come together to perform a short play
- Roadblock trivia challenge part 2 (one person/team)
- Create virtual tour of your country (individual/team)
- Road block trivia challenge part 3 (one person on team)
- Backpack challenge (team)
## Amazing Race Point Tally Sheet

<table>
<thead>
<tr>
<th>Activity</th>
<th>Due Date</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazing Race Car</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Where in the World?</td>
<td></td>
<td>3 per team member who completes it</td>
</tr>
<tr>
<td>Map</td>
<td></td>
<td>15 (rubric) 5 (teamwork)</td>
</tr>
<tr>
<td>Landmark Paragraph</td>
<td></td>
<td>15 (rubric)</td>
</tr>
<tr>
<td>Significant Person</td>
<td></td>
<td>15 (rubric)</td>
</tr>
<tr>
<td>Team Marker</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Road Blocks</td>
<td></td>
<td>points will vary</td>
</tr>
<tr>
<td>Drama Challenge</td>
<td></td>
<td>25 (rubric)</td>
</tr>
<tr>
<td>Geo Tour</td>
<td></td>
<td>25 (rubric)</td>
</tr>
<tr>
<td>Detours</td>
<td></td>
<td>points will vary</td>
</tr>
<tr>
<td>Extra Credit</td>
<td></td>
<td>points will vary</td>
</tr>
</tbody>
</table>
World Map: Continents and Oceans

On your map, please use what you already know to label the following:

<table>
<thead>
<tr>
<th>Oceans:</th>
<th>Continents:</th>
<th>Hemispheres:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>Asia</td>
<td>Northern</td>
</tr>
<tr>
<td>Pacific</td>
<td>Africa</td>
<td>Southern</td>
</tr>
<tr>
<td>Indian</td>
<td>Australia</td>
<td>Eastern</td>
</tr>
<tr>
<td>Arctic</td>
<td>Antarctica</td>
<td>Western</td>
</tr>
<tr>
<td></td>
<td>North America</td>
<td></td>
</tr>
<tr>
<td></td>
<td>South America</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Europe</td>
<td></td>
</tr>
</tbody>
</table>

Where do you live?

Planet: __________________________

Hemispheres _____________________, and __________________________

Continent ________________________

Country _________________________

State __________________________

County __________________________

City ____________________________

Street __________________________

Address _________________________
Where in the World?

Name: ______________________
Period: ______
Country/Empire: ________________

Fill out the following table about the geography of your country/empire:

<table>
<thead>
<tr>
<th>Hemispheres:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Continent:</td>
<td></td>
</tr>
<tr>
<td>Oceans or major bodies of water that border your country:</td>
<td></td>
</tr>
<tr>
<td>What time zones do you span?</td>
<td></td>
</tr>
<tr>
<td>What is the latitude and longitude of the center of your country/empire?</td>
<td></td>
</tr>
<tr>
<td>What countries or empires border yours?</td>
<td></td>
</tr>
<tr>
<td>What major rivers can be found within your borders?</td>
<td></td>
</tr>
<tr>
<td>What, if any, other major features can be found in your country? ex: mountain ranges, deserts, forests</td>
<td></td>
</tr>
</tbody>
</table>
Amazing Race Map Activity

Directions: Your team will create a map of your assigned country. Make your map big enough so that every team member can sit around it and work on it at the same time. Members may also work on an element of the map separately and then glue their work onto a larger map. Your map should be neat, accurate, clearly labeled (with uniform lettering), colored (do not leave any of the original pencil drawings visible), and overall, visually appealing and well-organized.

Your map should contain the following labelled elements:

Title
Names of team members
Outline of Country
Surrounding bodies of water, countries and/or continents drawn
All other bodies of water
Major cities Including capital
Mountain ranges, deserts, and/or other significant biome features.
Site of first known human settlement, if possible (?)
A key: with the following: symbols, time zone, latitude and longitude of capital, hemisphere, continent (if applicable).

Important: Leave a large area of blank space on your paper around the map of your country that will be filled later with pictures and paragraphs. You may draw surrounding countries and/or bodies of water, but know in advance that you will be covering the area around the map.

Remember: Always check the rubric BEFORE you begin working, during your work, and once more again before you turn it in.
Map Rubric (Part 1)
points possible in each category

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation</td>
<td>Map is neat, with correct spelling and grammar. Coloring and labeling is thoughtful and visually pleasing. Care was taken to choose the proper medium, use uniform labelling, etc. All cutting, pasting, etc. was carefully done.</td>
</tr>
<tr>
<td>Completion</td>
<td>Map includes a title, names, boundaries, bodies of water, surrounding countries, major cities, geographical features, first human settlements, and a key. Assignment is turned in on time.</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Information is correct and thorough.</td>
</tr>
</tbody>
</table>

Total: ___/  

Comments:
Significant Landmark/Artifact Writing Assignment

Congratulations! You have correctly identified your significant landmark/artifact. You will write two well-crafted and informative paragraphs. Follow these research, brainstorming, and writing steps, checking them off as you go:

___ Read the information at the websites provided on Edmodo/Schoology.

___ Read the rubric to inform the quality of your work.

___ Read the portions of the textbook and/or other paper resources as provided in your team folder.

___ Scan all readings again, looking for possible main points. Remember, you only have two paragraphs in which to succinctly explain the significance of the landmark/artifact. Jot down possible main points.

___ Using your resources, share your main points with at least one other group member.

___ Have your team member quickly scan at least two resources, checking to see if there were any main points you left out, or any points you left in that are not as important.

___ Once main points are confirmed (you may check with teacher if you still feel unsure), write your two paragraphs.

___ Complete the rough draft by the due date listed on your Tally Sheet. Check rubric again.

___ Peer edit rough drafts with team members using the Peer Editing Sheet.

___ Complete all revisions and have typed paragraphs ready on a Google Doc. You may change margins later, so do not print out at this time. Check rubric again. Upload final drafts to Edmodo/Schoology by the due date listed on the Tally Sheet.
The following clues are given to each group before the landmark writing assignment. Each team must determine which sites they will research before receiving the assignment instructions.

**China:**
1.) This is the place where the founder of Confucianism, Confucius, lived near the Yellow Sea.
2.) This very significant ancient road was used for trade, and one of the first pioneer traders was Zhang Qian.
3.) Prince Zheng was the first Chinese ruler to claim the title of Emperor, and he ruled from this state.
4.) This is the place (A court) that Kublai Khan visited during his famous journeys to China.
5.) This great architectural feature was built by Qin Shi Huang between 220 and 206 BC.

**Rome:**
1.) These mountains mark the northern border near the Black Sea of the Roman Empire at its height, about 117 C.E.
2.) This large impressive structure was where gladiators fought.
3.) This book written by Marcus Aurelius is a book of philosophy.
4.) This building in Rome still stands as an immense tribute to Roman architecture.

**Japan:**
1.) This artifact, a book, was written by Lady Murasaki Shikibu and is often called the world’s first novel. This book was written in a court. Where was the court during the Heian period?
2.) Minamoto Yoritomo was Japan’s first Shogun. Shogun relics are stored at this castle in center of Himeji City.
3.) Prince Shotoku traveled across this ocean to Korea and Japan in flimsy ships. Thus there was an exchange of ideas between Japan, Korea, and China. What is the ocean?
4.) Fujiwara Michinaga was the most successful Fujiwara leader. After his death, his son built this famous temple. What is it called and where is it?

**Saudi Arabia:**
1.) According to Arab and Muslim tradition, it was here that Abraham was tested by God. The test was that he leave Hagar his wife and baby son Ishmael in a desolate valley.
2.) This artifact is a place of worship built by Muhammad in Mecca.
3.) This artifact is the sacred book of the Muslims that were followed by caliphs such as Abu Bakr.
4.) This ancient city, NOT IN SAUDI ARABIA, was the spot that Muslim leader Saladin fought in the Crusades.
Significant Landmark/Artifact Writing Assignment Rubric

points possible in each category

<table>
<thead>
<tr>
<th>Organization</th>
<th>Main points are logically organized in two paragraphs with topic sentences. Writing is formal and informative. Google Doc is neatly formatted and includes author’s name.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thoroughness</td>
<td>Ideas are thoroughly and carefully communicated, with special attention to the significance of the landmark/artifact. Main points should be important and relevant.</td>
</tr>
<tr>
<td>Grammar</td>
<td>Capitalization, usage, punctuation, and spelling are all correct.</td>
</tr>
</tbody>
</table>

Total: ___/

Comments:
Dramatic Challenges for Intersection

**Directions:**
Your team will present the following story as a dramatic presentation. You can use any mode you like: narrator, skit (script), readers’ theater, tableaux, puppets, shadow play, even interpretive dance.

Your objectives:
- Tell the story, thoroughly.
- Be creative
- Work together during every phase- everybody brainstorms, everybody decides, everybody participates
- Create necessary props, scenes, etc. given your time constraints
- Check rubric for scoring:

<table>
<thead>
<tr>
<th>Communication and Collaboration 15</th>
<th>Each member contributes to the conversation, especially when it comes to work delegation and work product decisions. Conversation is constructive and respectful. All necessary communication happens within the group. Problems with a member are addressed to the member directly. Each member voices their needs and requests.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity 10</td>
<td>Effort was given to be creative in all aspects of presentation, including but not limited to characterization, sound effects lightings, creative props and costumes, sets, use of narration, etc.</td>
</tr>
<tr>
<td>Story Presentation 10</td>
<td>An interesting and thorough presentation of the story.</td>
</tr>
</tbody>
</table>

Total: _____ / 25

Stories used:
- Japan: The Mirror of Matsuyama
- Rome: Minerva and the Gift
- China: Wu and His Wives
- Islam: The Tale of Two Frogs
- India: Savitri
- Egypt: The Artful Thief
- Mesopotamia: Origin of gods
Create a Geo Tour

Your team will collaborate to create a virtual tour of your empire to share with the class. It will include all the significant people, places, and objects that you have learned about so far. Use the worksheet below to plan your tour, and then use the website to put it all together!

Tour Builder Website:
Go to: https://tourbuilder.withgoogle.com/

Each team member will plan one slide for the tour. When everyone has a plan, you will put them all together onto one tour.

<table>
<thead>
<tr>
<th>Slide</th>
<th>Location on map</th>
<th>Person/Landmark or Object</th>
<th>Team member responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You will also need to create an Introduction slide together that gives an overview of the empire and includes all team member names.

Steps:
1. Fill out the above chart.
2. Decide who will sign up for an account. (use your school gmail address)
3. “Share” with others in the group (they will only be able to view, not edit).
4. If it is not your “turn,” you may search for images, videos, and other information to add to your slide.
5. When it is your “turn” to add, put in your text (information from your paragraph), find an image, and choose a place on the map to put it.

You will have Friday and Monday to work on this.
### Amazing Race Geo Tour Rubric
### Points possible in each category

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation</td>
<td>Pictures and writing chosen fit topic. The font/color is easy to read and pleasing to look at.</td>
</tr>
<tr>
<td>Completion</td>
<td>All slides are complete, including title, name, and one paragraph description.</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Map is marked accurately. Information about people/landmarks is well researched and accurate. Pictures are accurate.</td>
</tr>
<tr>
<td>Presentation</td>
<td>All group members participated in the presentation of the tour. Appropriate volume, eye contact, and tone of voice were used.</td>
</tr>
</tbody>
</table>

Total: ________/_______
Amazing Race Photos

Featured below are pictures of the launch activity with design challenge of wind-powered car, maps, dramatic challenge, screenshot of Tourbuilder work samples, backpack, landmark writing assignment sample, and the final challenge of constructing the edible car.
Sea of Japan

The Sea of Japan, also known as the East Sea, is an important trade route with the surrounding countries, China and Korea. This trade route wasn’t only used for trading; it was the very foundation of Japan. Japan would not have turned into a civilized country without Prince Shotoku.
Jerusalem

The Crusades were a series of religious wars against Muslims. They were led by European Christians. The crusades took place between 1096 and 1291. One major reason for the Crusades was to acquire Palestine, specifically Jerusalem. Jerusalem was called the Holy Land by Christians, but equally as important to Muslims and Jews. The First Crusade started with the Byzantine emperor called upon Pope Urban II for help. He was scared of the rising power of the Seljuk Turks that were ruling Palestine. The pope organized four to lead the first crusade, each with an army of about 30,000. They fought through Antioch and Artoch. In June of 1099 they scaled the city walls of Jerusalem. That July, Jerusalem surrendered.

By the 1180’s, a sultan, Salah al-Din had formed the largest Muslim empire since the Seljuk Turks. Salah al-Din led a fight against the Crusaders in Jerusalem. He gained most of Palestine, and in 1187, Salah al-Din’s armies captured Jerusalem’s Crusaders. His captives were sold, sold for ransom, or sold for slavery. Europeans were shocked by the loss of Jerusalem. King Richard I of England led a fight against Salah al-Din, the Third Crusade. Richard forced the surrender of Palestinian town of Acre in 1191. Arrangements were made, and the two sides traded prisoners. Finally, at the end of a three year fight, the leaders signed a peace treaty, seeing both of their armies were weakening. Crusades to the Middle East lasted another hundred years.
### 2015 Ventura County Impact II Grant

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<tr>
<th>District:</th>
<th>Ventura Charter School</th>
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<tr>
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<td>Participant(s):</td>
<td>Shelly Ballmer</td>
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<tr>
<th>Lesson Plan Title:</th>
<th>The PhD Project</th>
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<tr>
<td>Lesson Plan Grade Levels:</td>
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<tr>
<td>Lesson Plan Subject Areas:</td>
<td>Language Arts/Reading (SAGE Category), Dance, Theater, Visual Arts</td>
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Many teachers would love to maintain the presence of visual and performing arts in the classroom, but with the constraints of teacher minutes and standards many of us agonizingly find ourselves either cutting it out of our schedules as an elementary teacher or never considering incorporating it in our secondary single subject classroom.

Research citing the positive effects of art instruction abound, such as the UCLA study which found that students with high arts involvement perform better on standardized tests. The concept of transfer proposes that learning in any area increases learning in all. And yet, as the NASAA states, the arts are quietly slipping out of our schools.

This project, called The Project of Your Heart’s Desire (PhD) involves students getting a ‘doctorate’ in the topic of their choice. PhD projects can be essentially any topic the student desires and the teacher approves as appropriate, with the visual and performing arts being strongly featured. Some projects accomplished by 8th graders have been learning how to play the guitar, learning how to play the drums, ceramics, woodworking, dance, dance choreography, directing a film, manga comic book, animation, fashion design, stage make-up, designing and building a skateboard, learning how to DJ, and photography. Some of the most diverse projects include learning funeral home make up artistry and suspended silk aerobatics. A student choreographed and entire musical last year, and brought down the house. The sheer preponderance of students choosing the visual and performing arts only serves to support our students’ desire to explore their artistic selves. Some choose to get better at something they already have some skill in, while most try something new entirely. (Parenthetically, the second-most common project involves animals: horse training, dog training, raptors, etc.)

This long-range project, which spans almost the entire school year and can be accomplished without giving up those precious class-time minutes, involves students pursuing their passion in a self-directed project of their choice while the teacher facilitates the project in as little as 30 minutes a week. The process is completely mapped out in very specific Phases that lead the student through the process. It is essential to enlist the cooperation of parents, which at first might seem daunting, but in the years I have led this project I have seen parents excited to see their middle school student so engaged, so proud to celebrate their success together with their classmates at the PhD Reception, and welcome the chance to be involved with their student.

The Phases, which are most easily accessible to the students if printed out and stored in their individual PhD notebook or stored online on an educational platform like Edmodo or Schoology, are explained in detail in the supporting documents.
The students not only explore the topic of their choice, but conduct research about their topic as they read resources, watch documentaries, spend time with a mentor/mentors, and conduct interviews (inspired by the ISEARCH paper).

From October to April, students check in with the teacher as they progress through a carefully calendared schedule.

They spend time talking to each other about their projects, connecting with supporting adults, and even learning email skills, telephone skills, and interviewing. The project commences with a presentation to a panel of four adults.

The students are dressed up, rehearsed, and have a trifold and their product or performance as they share the process of their passion project. They write a letter to the panel, and the panel gives them a feedback sheet. (See supporting Documents). In a sense, they are ‘defending’ their PhD. After all panel presentations are complete, there is a PhD

Reception that is basically an open house for parents and students, includes performances as necessary, and usually involves food and a festive mood! Admittedly, this project requires teacher energy and a network of adult support, but the end result is definitely worth it as we see these young people celebrating their successes together.

Assessment

*Please see the supporting documents for rubrics

Not able to be captured on a rubric, students gain confidence and pride as they navigate this process.

Standards Addressed

Seventh and Eighth Grade reading informational text and writing standards from Common Core Standards are covered throughout, including:

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.

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.

Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.

Write informative/explanatory texts, including career development documents (e.g., simple business letters and job applications), to examine a topic and convey ideas, concepts, and information, include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply grade 8
Reading standards to literature (e.g., “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”). b. Apply grade 8 Reading standards to literary nonfiction.

Adaptations

The scope of this project could be shortened by either completely eliminating or greatly reducing the expectations for the paper. The amount of adult support needed could be lessened by having the students work in groups. Any elementary teacher could use this project with reduced expectations of independence and reduced complexity of the project chosen. Any secondary teacher could introduce the idea of a year-long project in their subject area and an open house at the end.
PhD Project Proposal Reflection

Project Choice: Are you still persuaded this is the right project for you? Are you having any second thoughts?

Proposal Feedback: What notes did I put on your proposal, and what do you need to do about them?

Mentor: Do you have any leads on a mentor? List five things you can do to find a mentor.
Letter to the PhD Panel

You will write a letter in business format to the PhD Panel. The goal of this letter is to introduce yourself, introduce your project, and thank them for their time. Please follow the following format, look closely at the example given, and turn in a rough draft by this **Wednesday, 4/23**.

Paragraph 1: Introduce yourself. Thank them.

Paragraph 2: Introduce your topic, why you chose it, and your background with the subject when you started.

Paragraph 3: Briefly describe challenges and the main point of what this project has meant to you.

Paragraph 4: Introduce your product.
PhD Panel Presentation Feedback Sheet

Student's Name ________________________________

Project ________________________________

Panel Member Name ________________________________

Please rate the following on a scale of 1 to 10, with 1 being no engagement/effort and 10 being full engagement/effort.

1. Student demonstrates knowledge of his/her topic:
   a.) Major Finding 1: ( )
   b.) Major Finding 2: ( )
   c.) Major Finding 3: ( )

2. Student demonstrates poise, confidence, and preparation for the presentation. ____

3. The student's project demonstrates considerable time and effort put forth. ____

Additional notes:
PhD Grading Rubric
2013-2014 School Year

Student Name: _______________________

1) RESEARCH and PROCESS (SEARCH PAPER): ____/40 pts
   a) Please see rubric for scoring details.

2) PRODUCT: ____/80 pts
   a) Will be shared/evaluated on the day of the presentation.
   b) A passing PhD Project demonstrates that:
      i) The student has created a project which reflects their talents and interests.
      ii) The student has challenged themselves cognitively, physically, artistically, creatively, etc.

3) PRESENTATION ____/30 pts
   a) Please see rubric for scoring details.

4) FORMS: ____/10 pts
   a) PhD Final Proposal
   b) Mentor Agreement form
   c) PhD Permission Slip
   d) Copy of the letter to the panel

5) TIME MANAGEMENT: ____/20 pts
   a) Incremental deadlines were met. You met _____/10 incremental deadlines.

6) MENTOR HOURS: ____/20 pts
   a) Log sheet with at least 10 hours logged and signed.

TOTAL SCORE: ____/ 200 pts
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<td>Title page, Works Cited, headings, spacing, and font size directions were all followed.</td>
<td>Four of the five were completed according to directions.</td>
<td>Three of the five were completed according to directions.</td>
<td>Two or less of the five were completed according to directions.</td>
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<td>Spelling and grammar are completely or almost completely correct. The few errors that may be present do not interrupt the flow of text, or confuse the reader's understanding.</td>
<td>There are a handful of spelling and/or grammar mistakes, but they do not interfere with the reader's understanding.</td>
<td>There are several spelling and grammar mistakes that sometimes confuse or distract the reader and interrupt the flow of text.</td>
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Phase 1: Topic Exploration
Participate in the group brainstorming session and record the following:
A. My class came up with the following brainstorm of ideas:

B. Ideas that I came up with upon further reflection:

C. Let a topic choose you. Narrow your choices. What are your strongest interests? The three topics I sincerely want to learn more about.
My chosen topic is: __________________________

**Phase 2: Building Knowledge About My Chosen Topic**

A. Begin learning about your topic by doing some initial reading. Don't merely summarize any and all facts, but reflect on your reading after each sitting. Possible questions to consider: What stuck out to you? What interested you? What was totally new information?

**REFLECTION 1: AFTER READING (30 MIN.)**

**REFLECTION 2: AFTER READING (30 MIN.)**

**REFLECTION 3: AFTER READING (30 MIN.)**
**Phase 3: Pre-Recording**

A. Write four questions that relate to your prior knowledge of this topic, but that you would like to know more about.

1. 

2. 

3. 

4. 

B. Formulate a Central Research Question (CRQ). Your CRQ must be able to be answered with more than one answer.

PRACTICE:

REVISE:

REFINE:
Phase 4: Initial Search Plan

Develop a search plan that addresses your CRQ and outlines how you plan to conduct your search. Make sure that your plan shows all four components of the search: read, watch, ask, and do. You should choose your resources wisely, as it will be time-consuming to keep switching resources. Take your time as you choose, and do not wait until the last minute. You may need multiple trips to the library, much time online, etc., before you finally make your choice. Remember that you are not merely looking for any resource that has your topic in the title, but for a resource that you can understand, hopefully find interesting, but most importantly: addresses your CRQ.

A. **READ**

Seventh graders read one book. Eighth graders read two.

Fill in the following for book(s).

Author

Title of book:

City of Publication:

Publisher:

Year of publication:

Author

Title of book:

City of Publication:

Publisher:

Year of publication:
Seventh graders read one article, either online or in print. Eighth graders read two articles, either kind. (Eighth graders, copy and paste as needed for your second article.)

Fill in the following for online article.

Author:

"Title of Article."

Title of Magazine or Newspaper:

Date of Original Publication:

Title of Database:

Date Accessed:

Internet Address of Database:

Fill in the following for printed article.

Author:

Title of Article:

Title of Magazine or Newspaper:

Date of Publication (month/year):

Page(s):
B. WATCH

Watch one documentary (Netflix, video from the library, Youtube video, etc.) that is relevant to your CRQ. Remember that you are going to have to talk about how the documentary helped you answer the CRQ, so choose accordingly.

Film title:

Director/Producer:

Specialists/Actors/Speakers as relevant:

Film studio or distributor:

Year of release:

c. ASK

Interview one person who is an expert on your topic, and who can give you needed information about your CRQ. You will be writing interview questions beforehand that must be approved before you conduct your interview. These questions must be about your CRQ, rather than merely biographical questions. Do not put down their name until you have confirmed that they are willing for the interview. Ideally, the interview should be done in person, but telephone/Skype interviews are permitted as well.

Full name of person you intend to interview:
D. DO
Seventh graders need to fulfill ten (10) community learning hours. Remember that this learning needs to be done in the community. This may be done by taking a class, visiting a museum, visiting a business, attending a lecture, or volunteering for an organization. Other ideas not mentioned here may still apply, but need to be approved first. Please note: Going to the library and reading does not count as community learning. Eighth graders need to fulfill twelve (12) community learning hours either with a mentor or actually doing something to learn about your project (practicing, attending a class, etc.) You may not count reading or researching. You will list how you finally completed your hours on Phase 5D. Remember to have any questionable activities preapproved before you spend the time doing them.

First potential Community Learning Opportunity and an explanation of how it will help you answer your CRQ.

Second potential Community Learning Opportunity and an explanation of how it will help you answer your CRQ.

Third potential Community Learning Opportunity and an explanation of how it will help you answer your CRQ.

Fourth potential Community Learning Opportunity and an explanation of how it will help you answer your CRQ.
Phase 5A: Finalized Search Plan

To be completed AFTER all resources have been read, documentary has been watched, interview has been conducted, and hours have been completed.

A. Did I change any resources: Books, articles, interview, or documentary?
Please circle (yes/no)
If yes please write the new information below. Please refer to the information in the Search Plan to record the necessary information for your resources. Copy “New Source” section as needed.

New Source:

New Source:

B. Copy and paste your approved interview questions, along with their responses.
Phase 5B: Finalized Search Plan

C. List how you completed your hours. Do not include travel time.
   Example:
   Volunteer at Buena Animal Shelter – 4 hours total
   Listen to Lecture “Saving Our Animals” by Peggy Price at Ventura College- 2 hours
   Visit Channel Island Natural History Museum- 1 hour

D. Verification of Hours
   Print just this page, have a parent, mentor, or community member initial
   EVERY activity, and turn in a hard copy as well as this electronic file.
Phase 6: Learning the Guidelines of the ISearch Paper

ISEARCH PAPER GUIDELINES AND REQUIREMENTS

Your report is made up of five sections, each with a special purpose. The ideas listed in these guidelines are suggestions that you as the author should consider as you write your report for your audience (teachers, students, friends, and parents).

MY QUESTIONS

In this section I should:

- Draw the reader into my topic with a good lead (for example, a story, quote, question).
- Describe what I knew about the topic when I started the search and what I wanted to learn more about (why I care about the question).
- Clearly state my CRQ.

MY SEARCH PROCESS

In this section I should:

- Describe the sequence of steps for reading, watching, asking, and doing: What was it like finding resources? Were the resources hard to find? Did you change resources? Favorite resource? Most useful?
- Describe breakthroughs! Tell when it really got interesting.
- Acknowledge how others in my class and outside the school helped me carry out my search and/or create my project.
- Eighth graders: describe the creation of your project. What steps did you follow? How long did it take? Did you work alone or with a mentor? Favorite part?
WHAT I HAVE LEARNED

In this Section I should:

- Seventh graders ocus on two major findings or conclusions: These are answers to your CRQ. Support my conclusions with examples, details, stories, and arguments from at least two but ideally three sources that would help my reader understand how I arrived at my conclusions. Eighth graders only: For the third major finding, reflect on your personal growth. How did you grow as a writer, artist, dancer, actor, paranormal investigator, mechanic, etc?

WHAT THIS MEANS TO ME

In this section I should:

- Tell how I've developed as a researcher (for example, what do I know about gathering information now that I didn't know before?).
- Describe which things I learned mean the most to me and tell why they are important.

WORKS CITED

In this section I should:

- Have all of my references in alphabetical order.
- Use the correct MLA format for each reference.
from two but ideally three sources.

**Phase 7: Recording Learning**

*Here we will repeat the guidelines of the ISearch paper, but add space, tables, etc. that we will then use later to write our paper. Remember, the space provided is not necessarily the amount of space you will use.*

**Recording for the MY QUESTIONS section.**

A. Draw the reader into my topic with a good lead (for example, a story, quote, question).

B. Describe what I knew about the topic when I started the search and what I wanted to learn more about (why I care about the question).

C. Clearly state my CRQ.
Recording for the MY SEARCH PROCESS Section

A. Describe the sequence of steps for researching (reading, watching, asking)
   What was it like finding resources? Were the resources hard to find? Did you change
   resources? Favorite resource? Most useful?

B. Describe the sequence of steps for doing (hours)

C. Acknowledge how others in my class and outside the school helped me carry
   out my search and/or create my project.

D. Eighth graders: describe the creation of your project. What steps did you
   follow? How long did it take? Did you work alone or with a mentor? Favorite part?

Recording for the WHAT I HAVE LEARNED Section

A. Begin to list potential major findings here. Do not start writing them out until
they have been approved. Rewrite this table on another sheet and fill it in. What appears in more than one column?

<table>
<thead>
<tr>
<th>New info from articles</th>
<th>New info from interview</th>
<th>New info from books</th>
<th>New info from documentary</th>
<th>New info from hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B. First Major Finding
Support my answer to the CRQ with examples, details, stories, and arguments from two but ideally three sources.

C. Second Major Finding
Support my answer to the CRQ with examples, details, stories, and arguments

A. Third Major Finding
This finding is a personal reflection about what you learned about yourself.
Recording for the WHAT THIS MEANS TO ME Section

A. Tell how I've developed as a researcher (for example, what do I know about gathering information now that I didn't know before?).

B. Describe which things I learned mean the most to me and tell why they are important.
Phase 8: Draft, Revise, and Publish your I-Search Paper

General Directions:

11 point font
1.5 spaced
MLA format (use the following as a template)
Proofread by peers and parents
ISEARCH PAPER:
Your Title of Your Paper

Your Name

Project-based Learning

Date
MY QUESTION

MY SEARCH PROCESS

WHAT I LEARNED

My first major finding was

My second major finding was

My third major finding was

WHAT THIS MEANS TO ME
Quiner, Shannon. Personal interview. 3 March 2013.
Phase 9: Prepare Exhibits/Presentations

- You will share your findings with class. (8th graders will present their projects to PhD panel)

- Prepare a visual that represents your project.

- Write a 10-15 presentation (CLP) for your 7th grade peers Write a 20-25 minute presentation (PhD) for the PhD panel.

- Present your project.
learned the art of mixing, performed as a DJ and composed & produced his own song
wrote his own comic book
studied and performed as a DJ and created an Anti-Bullying documentary
choreographed dances for own music video
studied & performed guitar finger picking
volunteered at Seal Rescue in Long Beach, designed & created a Tile Table Top to sell at auction to raise $ for the rescue
“Teacher, what are we building today?” is a common question I hear as we get closer to Friday, our building day. In our classroom we give students a weekly opportunity to hypothesize, build and explore with hands-on learning. Building for a Promising Future is a series of “mini” engineering lessons where each challenge has been developed with the S.T.E.M. (science, technology, engineering and math) standards in mind. Building for a Promising Future is one way we can ensure that tomorrow’s leaders are thoughtful, critical, and creative thinkers.

Once a week students are presented with a building challenge and given a set of materials to create with. Students can choose to build with a partner or alone, depending on the challenge. Most of the materials can be found in the teacher supply room and/or a local dollar store. The following is a sample of the challenges the students have successfully accomplished so far this year:

- building structures as high as they can with a given set of materials
- testing buoyance by building paper boats that can take on various amounts of weight
- building gliders and trying to accurately hit a specific target
- making a small zip-line to propel a mini Lego figure
- constructing miniature catapults and trying to a bulls eye
- creating an articulated robotic arm out of cardboard to pick up an item

The format of each of these 20 plus challenges is as follows:

1. We begin as a class with the classic “Know/ Want to Know/ Learned Chart”. As a whole-group activity, we brainstorm what the students already know about a subject, such as buoyance.

   Next, we record what the students would like to learn about the topic. Once the students have successfully accomplished the lesson objectives, we return to the K-W-L chart and share what was learned.

2. The class is presented a large image on the overhead of the theme challenge using a Visual Thinking Strategy (Harvard’s Project One http://hepg.org/hep-home/books/visual-thinkingstrategies).

   We have a short class discussion about the image and students share what they notice. (Speaking and Listening Standard 6.4 & 6.5)
3. As a class we read a one page article in the theme of the challenge using AVID Critical Reading Skills. For example, if we were studying buoyance, we will read and annotate information from the article together (Standard 6th grade Informational Text 6.10). Key academic vocabulary is also introduced to help support the lesson.

4. The Friday building challenge is explained and materials passed out.

5. Then it’s time to build, test, and modify! The construction time takes about 20 minutes. (Ca. NGSS Middle School Engineering & grade 8 Ca. Physical Science Motion and Force Standards)

6. After building, students type up a reflection of what they learned using their individual netbook. The reflections also include what they would do different if they were presented with the challenge again. Extended research on the topic area is encouraged. This document is shared with other students in the class, and graded by the teacher using a simple 4-point writing rubric (6th grade writing standard 6.6 & 6.8).

7. We re-visit the “K-W-L Chart” and review what they previously knew, what they wanted to learn, and finally we complete the learned column together. Students are always impressed with themselves after seeing and reviewing how much they learned in a short amount of time.

8. Extension of the lesson (homework) is for students to explain to their parents and families what they built and what they learned from the building task. Many of the building challenges have been reconstructed at home.

Each challenge is blogged on the class website and includes images of the lessons so parents and the school community can see what the students are learning. Supporting evidence and visuals of these lessons can be found at http://datab9.blogspot.com/. Please take a few moments to check it out and note that no school, student, or teacher information given.

Currently there are over 20 challenges, and each Friday one more is taught and updated on the class blog. These challenges are easily adaptable for any teacher to implement into their curriculum, and no doubt will inspire even the most reserved and reluctant learner.

My students have had multiple opportunities to build this school year and I have observed an increase in creative thinking, higher level questioning and answers, and better team work amongst all my Title I, English Language Learning students. Many positive outcomes from these challenges can be seen in student attitudes about school and their futures. With Building for a Promising Future students have fun building and learning while developing the necessary skills needed to be successful in high school, college, career and beyond!
Friday, March 6, 2015

Champions Build Lego Bridges

Today student used the principals of building bridges from past challenges, but this time using Legos! The challenge was to build a Lego bridge that was at least five inches high and 8 or more inches wide. After they built their bridge, they applied 6 oz. washers on the bridge. All students were able to hold five or more washers. The class high score was ten washers! The last step was to write a reflection of what they engineered, learned and what they would do next time to make it even more stable!

Well done Champions!

Blog Archive

- 2015 (8)
- March (1)
- Champions Build Lego Bridges
- February (4)
- January (3)
- 2014 (22)
- 2013 (17)
- 2012 (76)
- 2011 (83)
Friday, February 27, 2015

Champions Engineer Lego Contraptions!

The challenge for today was to build a Lego Contraption at least one foot long that can guide a marble from top to bottom and land in a small cup. This is a similar challenge as a few weeks ago, but we used paper instead of Legos. They were able to use similar principles from the last build and apply them to today’s challenge. Students were able to have a partner or work alone.
Students did a great job. One group was able to build a 2.5 foot long contraption. After engineering their contrapions, students wrote a reflection of what they created, learned and what they would like to learn more about. Well done Students!

Friday, February 20, 2015

Champions Build Note Card Bridges!

We took last weeks engineering principles and had the students make another note-card tower/ bridge with a new challenge! This time the bridge needed to be one foot high and able to take on weight (a book/s).

First we watched a short video on the importance of the foundation of bridges, buildings and other structures.

https://www.youtube.com/watch?v=qqXncSVbToo

Next, we had a VTS exercise using various images of bridges. Our next step was to build! Each team got 20 note-cards, one meter of tape and books (to use as weight).
Building and engineering...

and the class record...
(watch to see this exciting learning experience)
Students had no problem building the note-card bridges, and the bridges were able to support quite a bit of weight. The class high score of weight was 18 books!

Well done Champions!

Friday, February 13, 2015

Champions Note Card Towers!

Students built note card towers today with 30 note cards and a yard of tape. First students reviewed images of building foundations.

Next, students were given their materials and 20 minutes to build. Champion students came up with some amazing towers! One team of students engineered their tower to be 4 feet high!
Our final step was writing a summary reflecting on what they learned today. Well done Champions!

Friday, February 6, 2015

Champions Build Bridges (with gumdrops and toothpicks)!

Today students were given fifty toothpicks, ten gumdrops, a ruler with the challenge of building a bridge three inches high to support a toy car.

First we looked at images of famous bridges using VTS strategies. Next, students were given the materials to build. Twenty minutes later students tested their bridges.

planning it out...

starting to build...
testing...

success...
After building, students wrote a short reflection of what they built and what they learned from the building.

Our final step was to research famous bridges and find similarities and differences in the designs.
Well done champions!
Thursday, January 22, 2015

Champions Build Pencil Towers!

Students were given the challenge of seeing how high they could build a pencil tower using twelve pencils, one foot of tape, one piece of construction paper and a pair of scissors. First, we read about basic building structures and studied an image of the world’s tallest building.


Next, students were given their materials and 20 minutes to build and modify.
After the 20 minutes was up, we measured each team's structure. Our last step was writing a reflection summary of what we built and learned today. Well done Champions!

Thursday, January 15, 2015

Champions Build Contraptions!

Today students were given the challenge to engineer a contraption that could guide a marble three feet and land in a small cup with a given set of materials. Students were given three large sheets of construction paper, a small cup, a meter of tape, scissors, a marble and a ruler. After looking at various images of contraptions, students began building theirs with a partner. In twenty minutes students were able to build, test, modify and test again.
After building, students reflected on what they constructed and what they learned from this activity. Students were encouraged to take their contraptions home and share them with their families.
Well done Champions!
(pictures and video will be posted in 24 hours)
Standards addressed:

5th Grade CA Science Standards:

1f. Students know differences in chemical and physical properties of substances are used to separate mixtures and identify compounds.

1g. Students know properties of solid, liquid, and gaseous substances, such as sugar, water, helium, oxygen, nitrogen, and carbon dioxide (CO2).

2g. Students know plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide and water. Students know that this process is called respiration.

5th Grade Next Generation Science Standards:

5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.

LS1.C: Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion.

5-PS3-1 The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water).

Narrative:

Students often develop a misconception that seeds need sunlight to sprout when in fact they sprout better in the dark. In order to have students understand this concept, the lesson begins with understanding where starch comes from and how it can be identified.

After reading about starch and how iodine is an indicator for starch, students learn that only foods that are plant based including soy cheese contain starch. From this initial lesson, students begin to have an understanding of the scientific method and how to set up an investigation using iodine as an indicator and making sure to have a control and only one variable.

The second lesson begins with these two questions: Do seeds contain starch? Can seeds sprout with only water and air? Students are encouraged to come up with a procedure that will help answer these questions. Students
are encouraged to look back at their notes from the previous lab and eventually students remember that they can test the seed with iodine. From their reading, they know that the inside of the seed is mostly food for the seed. To prove this students choose to place iodine on seed that has been cut in half. Once the class has established that a seed does contain starch because it reacted with the iodine, the students tackle the second question.

Can seeds sprout with only water and air? Often what students will say is that seeds can’t sprout with only water and air because they also need sunlight. Ask students to think of how to test if sunlight is necessary or not. Once students understand that they need two containers of the same seeds in water and that one container of seeds needs to be placed in the dark while the other in the sunlight, have students write a hypothesis and give them the materials to set up their experiment.

Students will be surprised that both sets of seeds sprout and that in most cases the seeds in the dark will sprout better than the seeds in the sunlight. From these activities, students learn that starch is stored in seeds, and that it is enough food for a seed to germinate in only air and water.

The next lesson involves dry active yeast, a single cell decomposer, which needs water and food to grow. From their reading students learn that as yeast reproduces it releases carbon dioxide during cellular respiration. Again students are asked to set up the experiment to prove that CO2 is produced. Students refer back to previous labs and decide to place a balloon over the mouth of the container of yeast, warm water and sugar. Once the carbon dioxide is captured in the balloons, the teacher asks students to come up with a way to prove that the gas produced is carbon dioxide. Again the students refer to a previous lab when they made carbon dioxide from vinegar and baking soda and then decide that the teacher will force the gas into a flask and then pour the invisible gas over a lit candle. The gas puts out the flame proving it is carbon dioxide.

Students are then asked to compare the difference between seeds and yeast. While seeds and yeast both are dormant and can be activated by adding water, yeast needs food in order to grow.

Seeds on the other hand, have all the food they need in the form of starch stored inside the seed.

This stored food allows seeds to germinate with only food and water. Once students have written their conclusion about the similarity and differences between seeds and yeast, the teacher can show students another indicator of carbon dioxide.

Bromothymol blue (BTB) solution, an indicator of carbon dioxide, turns green in the presence of CO2, so a second method of proving that yeast produces carbon dioxide during cellular respiration is to force the remaining carbon dioxide through a straw into a solution of BTB. This method also allows the teacher to exhale through a straw into a flask containing BTB to prove that we exhale CO2 during cellular respiration, a process that involves breaking down carbohydrates to obtain energy.

Formative Assessments:

Each lesson activity requires students to obtain information from their reading or from previous labs in order to complete the next lab effectively. The teacher asks key questions to engage students in critical thinking and in synthesizing the information obtained from key sections of text or labs. Asking students to analyze and synthesize what they have learned for the purpose of carrying out new investigations gives students a sense of accomplishment that makes learning meaningful and purposeful. Throughout these lessons students are assessed by their written hypothesis that is required to have a reason based on information. They are also assessed on their lab conclusions.
Summative assessment:

Students will be asked to make a model to describe that energy in animal’s food was once energy from the Sun. This model can be presented in the form of a drawing or a presentation using technology.
Starch Pre-Lab

I predict that TJs cheese won't have starch because cows can't produce their own starch.
Also, I predict scissors will have starch because it's wood.
I predict turkey won't have starch because it's from an animal and animals don't produce their own starch.
I predict Costco cheese will have starch because the animal that makes the cheese eats plants and plants produce starch.
I predict that popcorn will have starch because it comes from a plant and plants produce starch.
I predict that almond will have starch because it comes from a plant and a plant produces its own starch.

1/14/15
<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemical Reaction</strong></td>
<td>when reactants form products</td>
</tr>
<tr>
<td><strong>Carbohydrate</strong></td>
<td>a compound containing carbon, hydrogen, and oxygen that is an important source of food and energy</td>
</tr>
<tr>
<td><strong>Carbon Dioxide</strong></td>
<td>a gas that living organisms exhale</td>
</tr>
<tr>
<td><strong>Iodine Solution</strong></td>
<td>a disinfectant that reacts with starch by changing to a black or violet color</td>
</tr>
<tr>
<td><strong>Photosynthesis</strong></td>
<td>a process by which green plants and other organisms turn carbon dioxide and water into glucose and oxygen, using light energy trapped by chlorophyll</td>
</tr>
<tr>
<td><strong>Pipette</strong></td>
<td>a tool used to transfer a small amount of liquid</td>
</tr>
<tr>
<td><strong>Starch</strong></td>
<td>a white, odorless and tasteless carbohydrate found in some foods and used as a thickener</td>
</tr>
<tr>
<td>** Indicator**</td>
<td>something that shows a sign of something else</td>
</tr>
<tr>
<td><strong>Chlorophyll</strong></td>
<td>the green coloring matter of leaves and plants, essential to the production of glucose by photosynthesis</td>
</tr>
<tr>
<td><strong>Glucose</strong></td>
<td>the simple sugar that is the chief source of energy</td>
</tr>
<tr>
<td><strong>Oxygen</strong></td>
<td>the gas we breathe in</td>
</tr>
<tr>
<td><strong>Producer</strong></td>
<td>an organism that makes its own food from the environment; usually a green plant</td>
</tr>
<tr>
<td><strong>Cellular Respiration</strong></td>
<td>plants and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide and water</td>
</tr>
<tr>
<td><strong>Substance</strong></td>
<td>a type of solid, liquid or gas that has particular qualities</td>
</tr>
<tr>
<td><strong>Observe</strong></td>
<td>to look at and to pay attention to the fine details of what you are looking at</td>
</tr>
<tr>
<td><strong>Physical Property</strong></td>
<td>a characteristic that describes a substance, such as size, shape and texture</td>
</tr>
<tr>
<td><strong>Violet</strong></td>
<td>the word scientists use for the color purple</td>
</tr>
<tr>
<td><strong>Procedure</strong></td>
<td>a series of steps followed in a specific order</td>
</tr>
</tbody>
</table>
Iodine as an Indicator for Starch

Questions:
How can we prove which bottle has an iodine substance?

Hypothesis:
If substance 2 is the iodine solution, then it will react with starch by turning the rice violet.

Test 1 – Identifying the Iodine Solution

<table>
<thead>
<tr>
<th></th>
<th>Styrofoam</th>
<th>Paper</th>
<th>Cooked rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance 1 (Solution)</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Substance 2 (Solution)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Based on my observations, we can determine substance 1 is the iodine substance because it reacted with the rice.

Substance 1
Starch Lab Results

Name: [Name]

Hypothesis:

If substance X is the iodine solution, then it will react with popcorn by turning it violet.

Test 2 – Identifying foods with starch

<table>
<thead>
<tr>
<th>Food</th>
<th>TJ's cheese</th>
<th>Jicama</th>
<th>Turkey</th>
<th>Cheese</th>
<th>Cereal</th>
<th>Cucumber</th>
<th>Popcorn</th>
<th>Bread</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prediction</td>
<td>++</td>
<td>++</td>
<td>-</td>
<td>+</td>
<td>++</td>
<td>-</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Reaction to iodine</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
</tbody>
</table>
Seed Lab

Question: How can we prove the seed has a plant in it?

Materials:
- seed
- water
- iodine
- cup
- test tube
- 2 little plates

Hypothesis: If we put iodine solution on a seed that has been cut in half, then it will react with the indicator by turning violet or dark blue. That means it has starch and a plant/producer.

Materials: Question: Can a seeds sprout with just food and water and no sunlight?

- water
- 2 little plates

Hypothesis: If we put some seeds in water and in darkness, then the seed will not sprout because seeds need sunlight to sprout.
<table>
<thead>
<tr>
<th>Date</th>
<th>Sun</th>
<th>Dark</th>
<th>Sun</th>
<th>Dark</th>
<th>Sun</th>
<th>Dark</th>
<th>Sun</th>
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<th>Sun</th>
<th>Dark</th>
<th>Sun</th>
<th>Dark</th>
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<td>1/30</td>
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<td>1/31</td>
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</tbody>
</table>

**1/30/15**
Observation: **trees**, skin peeling, radish seeds are a little bigger.

**1/30/15**
Observation: Not many skin falling, darkness.

Notes (darkness):
- Seed coat is off.
- Water still there.
- Time: 8:00.
- Seed coats off.

Notes (sunlight):
- Water all gone.
- Seeds dry.

**2/3/15**
Notes (dark):
- They are sprouting.

Notes (sun):
- It's odd that the dark leaves little violet is growing better.
When seeds have only food and water, they can sprout because the seed stores food inside itself.

Question: Can a seedling grow with only soil, food, and water?

Notes (Darkness)  Notes (Sun)

- nothing is happening
- leaves forming
- green leaves

Notes (dark)  Feb 10  Notes (Sun)

- cup is fuzzy
- yellow greenish
- 2 1/2 cm.
- green

Notes (Dark)  Feb 11  Notes (Sun)

- yellowish
- bending down
- cup fuzzy
- stem white
- green
- tall
- cup not that fuzzy
- stem light green
Seed Lab

(Light) Notes
- Green plant
- dark green

(Dark) Notes
- Smells
- whiteish yellowish

Conclusion: Seedlings that grew in soil, water, and sunlight were stronger and greener because it has sunlight to produce food.

Conclusion: Seedlings that grew in only soil and water were weaker or didn't grow because they didn't have sunlight to produce food.

Picture
- Dark green - healthy
- a little fuzzy
- Root sprouting down
Seed Lab

Q: How can we prove that a seed has food or glucose inside it?

Materials:
- Seed
- Iodine

Hypothesis: If we iodine solution on a seed that has been cut in half, then it will react with the indicator by turning dark blue or violet because the seed would have glucose which is a type of sugar and starch converts to sugar and the iodine will react with the starch.

Results: During our observations we proved that the seed had food and glucose inside the seed. It turned violet when the iodine solution reacted with the glucose which was formed from starch.

Q: Can a seed grow only with its food and water?

Materials:
- Seeds
- Box or something that doesn't let sunlight in
- Water
- A little container to hold seeds and water

Instructions: First put some seeds in two separate containers. Then pour water in each container. Finally take one container and put in a box or dark space with no sun.
Seed Lab Continued

Hypothesis: If we put some seeds in water and in darkness, then the seeds will sprout and grow because a seed needs sunlight to do a process called photosynthesis where plants use sunlight, water, and air to make food. And in the darkness, there is no sunlight to help make food.

<table>
<thead>
<tr>
<th>S = sprout</th>
<th>N = not sprout</th>
<th>1/30</th>
<th>1/31</th>
<th>2/1</th>
<th>2 1/2</th>
<th>3/3</th>
<th>3 1/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black-Eye peas</td>
<td>P</td>
<td>n</td>
<td>n</td>
<td>P</td>
<td>P</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Peas</td>
<td>P</td>
<td>n</td>
<td>n</td>
<td>?</td>
<td>P</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Radish seed</td>
<td>P</td>
<td>n</td>
<td>n</td>
<td>?</td>
<td>?</td>
<td>S</td>
<td>S</td>
</tr>
</tbody>
</table>

Feb 2: The majority of seeds in the dark tray sprouted. Only 1 pea and 1 radish sprouted in the light tray.
Feb 3: The peas in the dark tray sprouted. The 3 peas sprouted in light. They didn't increase in size, though.
Feb 4: Seeds are losing seed until. The majority of seed sprouted in both trays.

Conclusion: When seeds have only food and water, they can sprout because the seed stores food inside itself.
Yeast and Cellular Respiration

Bread

- squishy
- soft
- holes
- white inside
- brownish outside

Ingredients for Bread
- 3/4 cup warm water
- 1 tsp salt
- 1 tbsp vegetable oil
- 1/2 cup milk
- 1 package active dry yeast
- 1-1/2 tbsp sugar
- 3 cups all-purpose flour, approximately

Cookies

- hard
- rough
- No holes
- sweet smell
- yellowish

Ingredients for Cookies
- 1/2 cup butter, softened
- 1 cup white sugar
- 1 egg
- 1 tablespoon vanilla extract
- 1 1/3 cups all-purpose flour
- 3/4 teaspoon baking powder
- 1/4 teaspoon salt

Describe the difference between bread and cookies:
The difference between bread and cookies is that bread is squishy, fluffy, soft and has air holes inside, while cookies are hard, rough, bumpy, and yellowish on the outside.
Cellular Respiration

From the passage about yeast and your knowledge of decomposers predict or hypothesize what you think will happen when you follow the procedure below. (If you chose to write a hypothesis, remember to add a fact to support your statement). Add a step to help prove your prediction or hypothesis.

Prediction/Hypothesis:
If yeast breaks down sugar to obtain energy, then it will take the waste product, which is CO₂, out. We can prove its CO₂ by capturing it with a bottle and a balloon.

Materials:
- 2 measuring cups
- yeast
- sugar
- spoon
- bottle
- funnel
- thermometer
- balloon

Procedure:
- Using a funnel, pour one teaspoon of yeast and one teaspoon sugar into a plastic bottle.
- Measure one cup of warm water.
- Use a thermometer to make sure the temperature of the water is between 32° and 40° C.
- Once you have verified that the temperature of your water is between 32° and 40° C pour the warm water into your bottle, cover the opening of the bottle with your hand and swirl the yeast, sugar and water until it is completely mixed.
- Use a balloon to capture the CO₂.
### Observations:

<table>
<thead>
<tr>
<th>Time</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Now</strong></td>
<td>The balloon is filled with gas.</td>
</tr>
<tr>
<td>9:40 minutes</td>
<td>- Balloon has a little air in it.</td>
</tr>
<tr>
<td></td>
<td>- Light brownish the water is.</td>
</tr>
<tr>
<td></td>
<td>- Bubbles on the top of water are white.</td>
</tr>
<tr>
<td></td>
<td>- There is white bubbles on the top.</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 minutes</td>
<td>The balloon started to rise.</td>
</tr>
<tr>
<td></td>
<td>The liquid is foaming.</td>
</tr>
<tr>
<td></td>
<td>The balloon is the same.</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>11:15 minutes</td>
<td>The balloon is the same.</td>
</tr>
<tr>
<td></td>
<td>The balloon is huge.</td>
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</tbody>
</table>

### Yeast Lab Observations:

<table>
<thead>
<tr>
<th>Time</th>
<th>Observations</th>
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</thead>
<tbody>
<tr>
<td><strong>Now</strong></td>
<td>Nothing has happened to the balloon.</td>
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<tr>
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</tr>
<tr>
<td>9:40 minutes</td>
<td>The balloon started to rise.</td>
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<tr>
<td></td>
<td>The liquid is foaming.</td>
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<td>The balloon is the same.</td>
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<tr>
<td>10:00 minutes</td>
<td>The balloon is the same.</td>
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<td>The balloon is the same.</td>
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<tr>
<td>11:15 minutes</td>
<td>The balloon is the same.</td>
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<td>The balloon is huge.</td>
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<tr>
<td>Labs and Activities in <em>Stored Energy and Cellular Respiration Unit</em></td>
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<tr>
<td>---------------------------------------------------------------</td>
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<tr>
<td><img src="image1" alt="Image" /> Students use an iodine solution to discover that foods that are from plants, such as rice, bread, potatoes and banana contain starch.</td>
<td></td>
</tr>
<tr>
<td><img src="image2" alt="Image" /> Students learn that seeds contain starch, which is enough food for the seed to sprout and grow with only air and water.</td>
<td></td>
</tr>
<tr>
<td><img src="image3" alt="Image" /> Once the seeds sprout, students plant the seedlings in soil and continue to observe what happens to plants with light compared to plants under no light.</td>
<td></td>
</tr>
</tbody>
</table>
Students do a lab on yeast to learn about cellular respiration. They learn that during cellular respiration, organisms release carbon dioxide gas when they break down food to obtain energy.

The gas is captured and poured over a lit candle to demonstrate that carbon dioxide is heavier than air, so it can be poured and it will put out a flame.

Students learn about bromothymol blue as an indicator for carbon dioxide. First, we forced the gas produced from the yeast experiment into the solution and the students observe that the solution goes from blue to yellow.
Next, a student exhales into a balloon and releases the gas into another bottle of BTB solution to prove that humans also release gas as a waste product. The solution changed to light green, so the students concluded that yeast produces a lot of carbon dioxide when it breaks down sugar for energy.

Finally, students observe the control (BTB in the flask that has no color change because no carbon dioxide has not been introduced) and students compare the results of the other two flasks. The flask in the middle has the gas from a bottle with yeast and sugar that was forced in with a straw. The flask with a light green color has the carbon dioxide from a student blowing into a balloon.
Iodine and Starch Lab Materials and Procedure

Materials: (Gather enough materials for this lab to be done in groups of two.)

- Each group needs a small piece of Styrofoam, some paper towel and a tablespoon of cooked rice
- 2 small bottles labeled 1 and 2 per group
- Yellow food coloring to mix with degraded iodine solution*
- Different foods to test: cucumber, apple, cereal, orange, cracker, sandwich meat, cheese, etc.
- Transfer pipettes - 2 per group
- Test tubes or small containers for food
- Plastic tweezers or spoons
- Iodine solution *
- Test tube rack (optional)

*Make the iodine solution by using Strong Tincture of iodine available in drug stores or on-line. It is a reddish brown solution, ingredients: ~7% iodine and 5% potassium iodide. Fill a small (5-12 ounce) clear juice bottle with water, add drops of iodine until the water turns the color of filtered apple juice – for best results the solution should be made fresh – the solution is sensitive to light and will degrade over time – it will have a longer shelf life when stored in a dark bottle. Leaving the solution in sunlight is how you make the degraded iodine solution.

Procedure:

Day 1:
1. Read article: Starch Test first as a jigsaw activity and then as a cloze assessment.
   See lesson plan - Jigsaw of Informational Text
2. Review the following vocabulary with a game of bingo. Refer to Vocabulary for Starch Lab and Bingo Checklist.
3. Have students write the list of vocabulary words needed for the lab in their interactive notebook.
   See Starch Test – Lesson Plan Notes

Day 2:
1. Hand out lab worksheet and ask students to look at the tables they will need to fill in.
2. Explain that you want them to first identify which bottle contains the iodine solution.
3. Ask students to refer to the article to help them decide what reaction they should see and with which item: Styrofoam, paper towel or rice.

4. Students need to formulate a question about starch in food.

5. Ask students to write their first hypothesis.

6. Have students share their hypotheses out loud to their partner before they write a hypothesis.
   Remind them that it should be in the following format:
   If ___________________ , then it will react with ___________________ .

7. Tell students which foods you brought for them to test and have them write the foods in the table and make their prediction before testing them with the iodine solution by writing a plus for starch and a minus for no starch in the table under the name of the food.

8. Finally, ask students to write their hypothesis for the second part of the lab.

9. As students finish writing both hypotheses allow them to come up and prepare their test tubes.

10. Once all students have their test tubes ready, give them two bottles: one with the degraded iodine and another with an iodine solution.

11. For increased challenge, do not fill all the number one bottles with the iodine solution and all the number two bottles with the food color solution. This way bottle #1 and bottle #2 will not have the same solutions for all groups.

12. After they have finished testing all the items, ask students to write their results and conclusion. Remind them to refer to the Science Lab Writing Rubric and use one of the sentence frames in their interactive notebook.

   Sentence Frames for a Conclusion
   When ________________________________, I understood that ______________________________.
   Since ________________________________, I can infer/conclude that ________________________________.
   Based on the fact that ________________________________, I can infer/conclude that.

**Extension**

1. As fruits ripen, the amount of starch can decrease. Unripe bananas contain a fair amount of starch, but the starches in ripe bananas have transformed to sugars, so a ripe banana will not react with iodine. Students can test the same fruit at different stages of ripeness.

2. A simple home extension is to take a cracker and chew it for approximately 5 minutes. Students will be able to note the difference in taste after chewing because the saliva in the mouth turns the starch in the cracker into sugar.
3. Place a drop of iodine solution on the interior of seeds to demonstrate the presence of starch.

As a continuation for the seed lab, once they conduct the investigation on whether seeds can "sprout" in the dark. Have students write a conclusion and a new question. The new question is "can seedlings grown the dark?"

**Technology Extension**

Foods high in starch are also high in carbohydrates. Ask students to go to the USDA website [https://www.supertracker.usda.gov/default.aspx](https://www.supertracker.usda.gov/default.aspx) and answer the following questions.

1. Do foods high in carbohydrates have more starch then foods low in carbohydrates?

2. What are empty calories? Are these high in starch?

3. Is the nutritional value of a food low if it is high in starch?

After this lab ask students to design a lab that will answer the question if seeds need soil and the Sun to germinate or can seeds grow in the dark.
Iodine as an Indicator for Starch

Questions:
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

Hypothesis:
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

Test 1 – Identifying the Iodine Solution

<table>
<thead>
<tr>
<th>Substance</th>
<th>Styrofoam paper</th>
<th>Cooked rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance 1</td>
<td></td>
<td></td>
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<tr>
<td>Substance 2</td>
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</tbody>
</table>

Hypothesis:
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

Test 2 – Identifying foods with starch

<table>
<thead>
<tr>
<th>Food</th>
<th>Prediction</th>
<th>Reaction to iodine</th>
</tr>
</thead>
</table>

Results: (Write your results in the past tense and answer the question.)
_____________________________________________________________________
_____________________________________________________________________
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_____________________________________________________________________
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_____________________________________________________________________

Conclusion: (Draw your conclusion from the results and refer back to the hypothesis.)
Standards:
2g. Students know plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide (CO₂) and water. Students know that this process is called respiration.

Review the following standard:
1g. Students know properties of solid, liquid, and gaseous substances, such as sugar (C₆H₁₂O₆), water (H₂O), helium (He), oxygen (O₂), nitrogen (N₂), and carbon dioxide (CO₂).

Description:
Students will learn that the process of respiration produces CO₂ and water.

Materials for Students:
- 5 – 7 Narrow necked 500-mL or less glass or plastic bottles (Number of bottles depends on number of groups)
- 5 – 7 Funnels (Number of funnels depends on number of groups)
- 5 – 7 high quality helium grade balloons
- Active dry yeast
- Sugar
- Plastic cups
- Plastic spoons
- Bread and cookies

Materials for Teacher:
- 500-mL Erlenmeyer flask
- 400-mL beaker
- A votive candle
- Matches

Background:
Students should know about:
- Decomposers, consumers and producers
- Photosynthesis
- Molecular formulas: sugar, C₆H₁₂O₆, water, H₂O, and carbon dioxide, CO₂.

Have students read about yeast and the uses for yeast and then place yeast in the Venn diagram. A good article can be found on this site:

Have students write the following standard on their worksheet:

2g. Plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide (CO₂) and water. This process is called cellular respiration.

Vocabulary: Review the list of vocabulary words to see what you need to do to help students learn these words:
- Do an activity or demonstration
- Visual aids – do a search for diagrams or applications on Google or Wikipedia
- Word Analysis
- Academic Vocabulary Organizer
Give the list of Life Science Definitions to students and write vocabulary words out of order on the board. Have students look words up in the glossary of science textbook or other science resources. Once they have finished writing the vocabulary words next to the definition show students how to memorize the words and definitions using the worksheet.

Play Bingo with this word list.

**Vocabulary:** See attached word list for science vocabulary.

For English Learners go over these descriptive words before asking them to compare and contrast bread and a cookie:

- **fluffy** - made of or covered with something soft and light (show objects that are fluffy)
- **flat** - smooth and level (show objects that are flat)
- **hard** – the opposite of soft (show objects that are hard)
- **soft** – the opposite of hard (show objects that are soft)
- **full of uneven holes** – define each word using objects (pumice will work well for this)
- **inflated** – full of gas (show objects that are inflated and deflated)
- **grow (grew)** – to develop or become bigger over time
- **dehydrated** – the water has been removed

**Procedure:**
Give students a small piece of bread and a cookie. (I use Vanilla Wafers because they are similar in color to white bread.) Have students compare and contrast the physical differences between bread and cookies.

**Venn diagram:** Ask students if they know what bread and cookies are made of. Have students write flour and sugar in the overlapping section of the Venn diagram.

Ask students if they think that there must be an ingredient that bread and cookies don’t share. Review the characteristics of yeast and dehydrated yeast. Emphasize the fact that yeast is not a plant and therefore cannot make its own food like plants.

Show students how to make a yeast solution with warm water. Ask students what they believe will happen if they add sugar to the yeast solution. Have students reread the standard. Ask students, “Do yeast cells also need sugar to obtain energy?” Have students write a prediction. “If __________ breaks down __________ to obtain energy, then it will ________________ and ________________ .”
Only write this sentence frame down if students cannot come up with a prediction after consulting with each other and after they have analyzed the meaning of the standard either by looking up any unknown words or researching in their textbook.

After everyone has written a prediction, students will do the following in groups of 4-5:

- Mix one teaspoon of yeast and one cup of warm water; keep stirring until all the yeast is dissolved.
- After all the yeast is dissolved, add one teaspoon sugar.
- Pour the solution into a clear bottle either glass or plastic.
- Hand out balloons and have students attach the opening of the balloon over the mouth of the bottle.
- Have students fill out the chart with information about what the balloon looks like and what is in the bottle.
- Students should touch the bottle and feel the temperature.
- Bottles should in a felt pocket and in the sun or in a warm area.
- Every half hour write down observations on student worksheet.

If students do not question what kind of gas has inflated the balloons ask the following questions:

1. How do you know a gas was produced?
2. What kind of gas is in the balloons?
3. Is there a way we can test the gas?
4. Do you remember the two types of gases we tested when doing the lung model?
5. How did we test for CO$_2$ and O$_2$?

Have students write a prediction before you perform the test. Keep questioning until a student comes up with “If yeast cells break down sugar for energy, then CO$_2$ will be produced.” “If yeast breaks down sugar for energy, then it will produce CO$_2$.”

Gather all the bottles. Light a candle and place it in 400-mL beaker. Ask for a student volunteer. Then carefully remove each balloon and squeeze the balloon to force the CO$_2$ gas into the Erlenmeyer flask and have the student quickly cover the flask with a cardboard or a note pad until you are ready with the next balloon full of gas. Continue emptying all the gas from the balloons and then pour the gas over the lit candle. Make sure to point out that the reason the flame went out is because the CO$_2$ replaced the O$_2$ in the beaker and that fire needs oxygen in order to burn.

**Assessment:**
Students will be evaluated on how well they fill in the table and answer the questions on the worksheet.

**Journal prompts:**

1. **Is yeast a producer or a consumer? How do you know?**
   Since the yeast ______________ and ______________ , I can infer that yeast is ______________ or ______________ .

2. **What would have happened if you would have added twice as much sugar?** Look for an answer that includes: would have + past participle

**Extension:**
Write the following chemical reactions and ask students if they can figure out which one is the basic equation for respiration and which one is for photosynthesis.

\[ 6 \text{ CO}_2 + 12 \text{ H}_2\text{O} + \text{ Solar Energy} \rightarrow \text{ C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2 + 6 \text{ H}_2\text{O} \]
C\textsubscript{6}H\textsubscript{12}O\textsubscript{6} + 6 O\textsubscript{2} \rightarrow 6 CO\textsubscript{2} + 6 H\textsubscript{2}O + Energy for cells

Have students defend their reasons why one is for respiration while the other, which is the exact opposite, is photosynthesis.

Do the experiment again and have different groups put in different amounts of sugar. Make sure that all the other variables are the same. The bottles you use should be exactly the same, measure the warm water carefully and place the bottles near the same heat source. Help them write the following hypothesis.

**The more sugar is mixed in with yeast and water, the more CO\textsubscript{2} will be produced.**
**The more sugar is added to the yeast solution, the more it will produce CO\textsubscript{2}.**

Graph your answers with the number of teaspoons of sugar on the x–axis and the amount of gas that was produced on the y–axis.

The amount of gas can be measured by the amount of displacement of water when the inflated balloon is placed in a small tub of water.

Use Bromothymol to help prove that yeast releases carbon dioxide and that we also release carbon dioxide. For safety precautions do not blow directly through the straw, but instead exhale into a balloon and then force the gas through the straw.

**Resources:**
South Coast Science Project – 2006
Teacher Information
What is Yeast?

Yeast are single-celled fungi. As fungi, they are related to the other fungi that people are more familiar with. These include edible mushrooms available at the supermarket, common baker’s yeast used to leaven bread, molds that ripen blue cheese and the molds that produce antibiotics for medical and veterinary use. Many consider edible yeast and fungi to be as natural as fruits and vegetables.

Yeast Cells

Over 600 different species of yeast are known and they are widely distributed in nature. They are found in association with other microorganisms as part of the normal inhabitants of soil, vegetation, marine and other aqueous environments. Some yeast species are also natural inhabitants of man and animals. While some species are highly specialized and found only in certain habitats at certain times of the year, other species are generalists and can be isolated from many different sources.

Baker’s yeast is used to leaven bread throughout the world and it is the type of yeast that people are most familiar with. Baker’s yeast is produced from the genus and species of yeast called Saccharomyces cerevisiae. The scientific name of the genus of baker’s yeast, Saccharomyces, refers to “saccharo” meaning sugar and “myces” meaning fungus. The species name, cerevisiae, is derived from the name Ceres, the Roman goddess of agriculture. Baker’s yeast products are made from strains of this yeast selected for their special qualities relating to the needs of the baking industry.

The typical yeast cell is approximately equal in size to a human red blood cell and is spherical to ellipsoidal in shape. Because of its small size, it takes about 30 billion yeast cells to make up to one gram of compressed baker’s yeast. Yeast reproduces by budding, a process during which a new bud grows from the side of the existing cell wall. This bud eventually breaks away from the mother cell to form a separate daughter cell. Each yeast cell, on average, undergoes this budding process 12 to 15 times before it is no longer capable of reproducing. During commercial production, yeast is grown under carefully controlled conditions on a sugar containing media typically composed of beet and cane molasses. Under ideal growth conditions a yeast cell reproduces every two to three hours.

Yeast is the essential ingredient in many bakery products. It is responsible for leavening the dough and imparting a delicious yeast fermentation flavor to the product. It is used in rather small amounts in most bakery products, but having good yeast and using the yeast properly often makes the difference between success and something less than success in a bakery operation.

http://www.dakotayeast.com/yeast_what.html
Yeast and Cellular Respiration

**Ingredients for Bread**
- 3/4 cup warm water
- 1 tsp salt
- 1 tbsp vegetable oil
- 1/2 cup milk
- 1 package active dry yeast
- 1-1/2 tbsp sugar
- 3 cups all-purpose flour, approximately

**Ingredients for Cookies**
- 1/2 cup butter, softened
- 1 cup white sugar
- 1 egg
- 1 tablespoon vanilla extract
- 1 1/3 cups all-purpose flour
- 3/4 teaspoon baking powder
- 1/4 teaspoon salt

**Describe the difference between bread and cookies:**

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________________________________________________________________________
From the passage about yeast and your knowledge of decomposers predict or hypothesize what you think will happen when you follow the **procedure** below. (If you chose to write a hypothesis, remember to add a fact to support your statement). Add a step to the procedure below to help prove your prediction or hypothesis.

**Prediction/Hypothesis:**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Materials:**

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

**Procedure:**

- Using a funnel, pour one teaspoon of yeast and one teaspoon sugar into a plastic bottle.
- Measure one cup of warm water.
- Use a thermometer to make sure the temperature of the water is between 32° and 40° C.
- Once you have verified that the temperature of your water is between 32° and 40° C pour the warm water into your bottle, cover the opening of the bottle with your hand and swirl the yeast, sugar and water until it is completely mixed.
Observations:

<table>
<thead>
<tr>
<th>Now</th>
<th>___ minutes</th>
<th>___ minutes</th>
<th>___ minutes</th>
<th>___ hour</th>
</tr>
</thead>
</table>

What evidence do you have that a chemical reaction took place? What conclusion can you make about cellular respiration?

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What was the product of this chemical reaction?

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

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________________________________________________________________________________

________________________________________________________________________________
Produce and Consumer (Decomposer)

Seed

Active Dry Yeast

Explain the similarity and differences between a seed and active dry yeast.

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___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
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___________________________________________________________________________
___________________________________________________________________________
One sure fire way to excite students about learning is involving animals. Take it to the next level and have children research and create their own persuasive presentations, and you’ll have students who don’t want to leave the room! This innovative curriculum resulted in students obtaining their personalized classroom pet. In order to reach this goal, there were a series of lessons and activities that had to be completed, including a detailed presentation in front of their peers and a panel of judges.

The teacher primed the pump by bringing in literature as a read aloud. The World According to Humphrey was about a golden hamster that became a classroom pet and changed the lives of the students as it made weekend visits to their homes. Some children then decided that a hamster could be the ideal pet. Other students weren’t necessarily convinced. Votes came in for red-eyed tree frogs, cornsnakes, black-eyed goldfish, and bearded dragons.

Thus began the second phase. Students had to write a research report on their animal, learning their respective animal’s diet, habitat, and physical and behavioral characteristics with a detailed fine art sketch that labeled the characteristics. They further researched an appropriate habitat for the animal, and determined a shopping list of items to buy for the animal to thrive in a classroom environment. With this information, the children created an itemized spreadsheet listing the quantity, item, and cost. During this process, students delved into real world experience by evaluating different cages/tanks, considered sale items, contrasted different substrates and food, all the while exclaiming, “Wow! This sure costs a lot of money! I didn’t know things could be so expensive!” Some students chose to be frugal with their items, and others weren’t as spendthrift. Their itemized choices would resurface in their presentations. All of this related to the mathematics standards for the third, fourth and fifth grade regarding multiplication and adding decimals. Mathematics emphasis was further enhanced by having a mini fundraiser with the caveat that students were to bring in small change for two weeks to supplement the purchase of the classroom animal. Each day, the class would count the change for the daily and aggregate total. This data was converted into circle graphs, bar graphs, and line graphs, enfolding Common Core Statistical and Probability Standards.

The third phase was based on presenting their animal’s information. This entailed multiple parts: an informational portion, an innovative creative portion, and a persuasive portion. The students needed to have a presentation that provided detailed facts and information about their animal, enough that their fellow classmates
gained a greater understanding of the animal from a nonfiction perspective. Also, the students created an innovative portion, which could be a play, an interview, or a question/answer panel.

Moreover, their presentation included advertising and persuasive techniques such as bandwagon, glittering generalities, or testimonials; Common Core Language Arts Standards Rubrics were embedded in expository, narrative and persuasive writing samples.

Finally came the presentation date. Students worked in groups to prepare, creating dioramas, props, costumes, and posters, adding a tremendous amount of personal expression. This student centered focus had the classroom buzzing with activity, as each student used their creative thinking skills and were inspired by collaborating with others. They made charts, took classroom polls, sewed puppets, and wrote scripts. They practiced their plays and interviews, making sure to speak clearly and with expression, another Common Core Rubric Standard. Gifted students worked with English Language Learners, as the heterogeneous grouping was based on animal preference, not solely the students’ academic ability.

What added to the real world relevance was further enhanced when the presentations occurred. Students presented in front of their peers and a panel of judges, consisting of the principal, a veterinarian, a biologist, and the teacher, who scored the presentations with the Common Core Presentation Rubric.

Students in the audience participated by writing down facts they learned, positive feedback, and constructive advice, which was made into a booklet for the presenters to keep. Afterwards, it was voting time. The panel of judges discussed aloud their thoughts on each presentation and explained what stood out as excellent. Judges shared about their own profession, and how the proper care and treatment of animals related to their lives and their occupation. Finally, it was time for the voting process, and a decision was made. The hamster had won!

Then came the next exciting step. The teacher went and purchased the hamster with cage, food, bedding and accessories. The students wrote their own narrative stories personifying Cupcake, the new class pet. The writing was prolific and extremely creative, including dialogue and fantastic storylines. As the stories were shared aloud, students encouraged one another with their own creative writing, thus feeding the fire of inspiration. When Cupcake got loose in the classroom, the children wrote adventure stories of how she ended up in the wastebasket in the adjoining room. This led to an excellent lesson on comparing and contrasting Harry Houdini with Cupcake. Students who took home Cupcake for the weekend wrote pages and pages to share with their classmates, which became a classroom book.

No textbook can come close to teaching what personal experience and ever-evolving imaginations can develop through these innovative learning activities. This curriculum is highly expandable for grades K-8. It enfolds mathematics, science, geography, language arts, and fine arts.

Teachers can tailor and modify lessons to accommodate their grade levels and adjust levels of rigor.

Lessons commence with factual research and extend to creative activities. Students see the relevance and consequences of real world animal care, its costs, its benefits, and feeling part of a community. It is exciting for students, who bring in siblings to the classroom to share their pet. It is highly motivating for students on the spectrum, who consider the pet to be a special and unique friend to trust. Altogether, bringing “It’s Alive…And A Teaching Tool” to any classroom provides a uniquely educational and positive experience.
The Adventures of Cupcake

Day 1:
Once upon a time, there was a monster named Cupcake. One day, a monster named hamburger wanted to make a burger.

I opened my eyes and suddenly heard a noise. I wondered if it was a big monster. Suddenly I heard a squeak! I screamed HELP! HELP! HELP! I heard a monster called Captain. Captain said, "It's not a monster, it's a squishy."
Unit Overview

The engineering method is a new concept for Kindergarteners to grasp. And yet, how fun, engaging and enriching is it for Kindergarteners to learn a simple, grade appropriate version of the process? Using hands-on opportunities, our diverse students work in heterogeneous teams to explore the scientific content of Weather and Climate. Extending from these concepts, students are allowed to apply this scientific knowledge collaboratively to also explore the engineering method.

Our unit begins with a simple STEM activity using spaghetti and marshmallows to build tall towers and solve a problem with limited resources. As our Kinders work in collaborative teams, we introduce the steps to the engineering method. Students begin by creating a drawing of the tower they want to build.

Then as a team, they build their prototype taking intermittent measurements as their building progresses. We take a moment to stop and review what we have done, sharing what is working well and what we think needs to change. Then we spend additional time redesigning our prototypes to increase our towers height.

Eventually, we share our final tower explaining why it worked and solved the problem presented. Students are encouraged to “write” at their level and using their preferred learning style to show understanding throughout the process.

Once the Engineering Method is understood, we use a consistent format to apply scientific knowledge to new STEM problems. Following the NGSS science standards for Weather and Climate, we use our familiar counting bears to create motivation and engagement, and new problems for our students to solve. For instance, we learn that the sun heats the surface of the earth unevenly. As we are exploring that concept in the classroom and through our gardens, we also present our students with an additional problem involving their bears: Our bears are too hot and we need to build a structure to protect them from the effects of the sun. As we build a shade structure outside, students work to create structures that will protect their bears from the effects of the sun. Not only are students exploring the scientific concepts, they are also reinforcing the engineering method.

To address the Common Core standards in this unit, teachers are reading books about bears and weather allowing time for students to practice reading, writing and math skills. Students are given opportunities to count and graph as they create structures that are meant to hold more than one bear and provide a challenge to hold the “most” bears. As a culminating project, students are looking at the cross cutting concepts of “cause and
effect” to look at weather patterns and make predictions about severe weather in our area. Taking that knowledge, students create a structure that will protect their bears from that “severe weather condition” in our local area: drought. Students must create a structure that helps their bears survive in a drought. We extend this activity as we look at severe weather in other areas of California, and brainstorm both problems and solutions that may occur for our bears. Choosing one of the severe weather situations we have discussed, student teams create a situation where a problem needs to be solved. Students not only go through the engineering method to solve this problem, they also create a story to explain how the bears ended up in this situation in the first place. Both stories and solutions are shared with classmates and parents as students present their stories and design solutions.

This cross-curricular unit allows students to explore the engineering method and create an innate understanding of the scientific content showing understanding through reading, writing and math at an appropriate yet rigorous kindergarten level.

Essential Standards Addressed

KPS1
Make observations to determine the effect of sunlight on Earth’s surface.

KPS2
Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

KESS21
Use and share observations of local weather conditions to describe patterns over time.

KESS32
Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.


Success and Assessment

This unit begins with a pretest. Based on student knowledge, material will be adapted by the teacher. Formative assessment will drive instruction throughout the unit’s progress. Ongoing Formative Assessment:

- Teacher observation of students engaged in cooperative learning investigations
- Engineering Method worksheets
- Science Journals

Summative Assessment:

- Students will be evaluated using a rubric
  - Groups identify a severe weather condition in California
- Students create a story involving the bears and this weather condition which leads to an engineering problem
- Students create a structure using the Engineering Method to solve a problem.

Positive Effects on Students

As students work in diverse, heterogeneous groups, all students are responsible and successful at a differentiated level, showing their understanding through various modalities. All learning styles are addressed in these groupings providing lots of opportunities for showing knowledge and collaboration. Additionally, this project is beneficial in that it infuses language arts, math, and science to ignite student interest in engineering. Through teacher monitoring and collaborative grouping, students at all levels will feel like encouraged, supported and successful Kindergarten engineers.
<table>
<thead>
<tr>
<th>Table</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
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<tr>
<td>2</td>
<td>11 1/2</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
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<td>5</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>11</td>
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</tbody>
</table>
Engineering a Shade Structure
Weather or Not, Kinders Can Be Engineers

Grade: Kindergarten
Topic: Weather and Climate
Engineering Method
Time: 6 weeks

This is a cross-curricular unit combining the NGSS standards for Weather and Climate and the Engineering Method to solve problems. This unit revolves around the comfort of our “counting bear” friends. As students learn the scientific content related to weather, new engineering problems are presented based on that content knowledge. Students work in collaborative teams ending with a STEM project that shows understanding of severe weather and difference by region. Students create story books relating to their engineering problems tying in what they know about how the sun heats the earth’s surface and weather to protect their “counting bear” friends. This is a cross-curricular unit incorporating math and language arts Common Core standards.

<table>
<thead>
<tr>
<th>NGSS Standards Taught or Learned Through Discovery</th>
<th>Identified Learning Target</th>
<th>Evidence of Success in Achieving Learning Target (Assessments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-PS-1 Make observations to determine the effect of sunlight on Earth’s surface.</td>
<td>The sun heats the earth’s surface unevenly.</td>
<td>Students will graph the temperatures of different materials (sand, soil, rocks and water) to determine that different materials on the earth’s surface heat at different rates.</td>
</tr>
<tr>
<td>K-PS-2 Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.</td>
<td>In order to protect the earth from the warming effects of the sun, something must be block the effect of the sun. (example: shade structure, umbrella, etc.)</td>
<td>Students will work as a class to provide shade to shade loving plants. They will compare the differences between those shade loving plants grown in the shade and the sun. Using the engineering method, students will create a structure to protect their “bears” from the warming effects of the sun.</td>
</tr>
<tr>
<td>K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time.</td>
<td>Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.</td>
<td>Students participate in daily graphing of the weather twice daily, noting differences between temperatures taken earlier in the day with those taken close to noon.</td>
</tr>
<tr>
<td>K-ESS3-2 Ask questions to obtain information about the purpose of</td>
<td>Some kinds of severe weather are more likely than others in a given</td>
<td>After identifying a local severe weather condition in our area,</td>
</tr>
</tbody>
</table>
weather forecasting to prepare for, and respond to, severe weather. region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.

students will use the engineering method to protect their bears from the negative effects of that weather condition.

Mound School Connections

Global Citizenship Connections:
Citizenship: Students will learn that not all local residents are prepared to deal with the changing weather conditions around the city.
Connections: Students will be aware of severe weather conditions in other parts of California.
Communication: Students will explore possible ways to reduce the effects of the sun on local crops and share that knowledge with their farm partner and their parents.
Cultural Knowledge: Students will realize that people need to respond to weather conditions based on where they live and those weather conditions may be different from their own.

Outdoor/Garden Connections: Students will explore how sun and shade loving plants survive in either the shade or sun. Students will help to create a shade structure in their garden to provide an “ideal climate” for shade loving plants.

STEM Projects

Stem projects throughout the unit: Different engineering projects will be explored as students learn different scientific content knowledge.

STEM final project: After learning about a severe weather situation, students will use the engineering method to create a structure to protect their bears from the effects of that severe weather.

1. Desired Results

Enduring Elements (Big Ideas)

The sun heats the earth’s surface unevenly
A shade structure can protect from and reduce the effects of the the sun
Weather is different all over the world
Our severe weather condition is drought (Ventura)

Essential Questions

- How can I protect plants and people from the severe effects of the sun?
- What kind of structure will best protect the surface of the earth from the negative effects of the sun?
- Can plants that like the shade survive in a situation where they are often in the sun?
- Can plants that like the sun survive in a situation where they are most often in the shade?
How can I predict and protect from a severe weather condition?

<table>
<thead>
<tr>
<th>Understanding the Standard (Disciplinary Core Ideas)</th>
<th>Essential Knowledge, Skills and Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Sunlight warms Earth’s surface.</td>
<td>Students who demonstrate understanding can:</td>
</tr>
<tr>
<td>- Weather is the combination of sunlight, wind,</td>
<td>- use the engineering method to solve</td>
</tr>
<tr>
<td>snow or rain, and temperature in a particular</td>
<td>problems</td>
</tr>
<tr>
<td>region at a particular time. People measure</td>
<td>- know that the sun heats different</td>
</tr>
<tr>
<td>these conditions to describe and record the</td>
<td>things on the earth at different</td>
</tr>
<tr>
<td>weather and to notice patterns over time.</td>
<td>rates</td>
</tr>
<tr>
<td>- Some kinds of severe weather are more</td>
<td>- understand that the temperature</td>
</tr>
<tr>
<td>likely than others in a given region. Weather</td>
<td>changes depending on the time of the</td>
</tr>
<tr>
<td>scientists forecast severe weather so that the</td>
<td>day</td>
</tr>
<tr>
<td>communities can prepare for and respond to</td>
<td>- understand that keeping track of the</td>
</tr>
<tr>
<td>these events.</td>
<td>weather in charts and graphs can</td>
</tr>
<tr>
<td>- Asking questions, making observations, and</td>
<td>help predict what the weather is</td>
</tr>
<tr>
<td>gathering information are helpful in thinking</td>
<td>going to be</td>
</tr>
<tr>
<td>about problems.</td>
<td>- understand that the weather can have</td>
</tr>
<tr>
<td></td>
<td>negative effects on the earth</td>
</tr>
<tr>
<td></td>
<td>- know that there are many solutions to</td>
</tr>
<tr>
<td></td>
<td>an engineering problem and the</td>
</tr>
<tr>
<td></td>
<td>engineering method can help to find</td>
</tr>
<tr>
<td></td>
<td>those solutions</td>
</tr>
</tbody>
</table>

Science Vocabulary
- weather, heating, cooling, prediction, weather pattern, engineering method, problem, forecast, severe weather

2. Prior Knowledge and Assessments

<table>
<thead>
<tr>
<th>Prior Knowledge</th>
<th>Throughout the Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>- the sun is hot</td>
<td><strong>Formative Assessment:</strong></td>
</tr>
<tr>
<td>- weather is what we see and feel on a daily basis</td>
<td>- Teacher observation of students engaged in cooperative learning investigations</td>
</tr>
<tr>
<td></td>
<td>- Engineering Method worksheets</td>
</tr>
<tr>
<td></td>
<td>- Science Journals</td>
</tr>
<tr>
<td></td>
<td><strong>Summative Assessment:</strong></td>
</tr>
<tr>
<td></td>
<td>- Students will be evaluated using a rubric</td>
</tr>
<tr>
<td></td>
<td>○ Groups identify a severe weather condition in California</td>
</tr>
<tr>
<td></td>
<td>○ Students create a story involving the bears and this weather condition which leads to an engineering problem</td>
</tr>
</tbody>
</table>
Students create a structure using the Engineering Method to solve a problem.

### 3. Learning Plan

#### Reference to CCSS Standards (Cross Curricular Connections)

**ELA/Literacy -**
- RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS3-2)
- W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS3-1),(K-PS3-2),(K-ESS2-1)
- SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-ESS3-2)

**Mathematics -**
- MP.2 Reason abstractly and quantitatively. (K-ESS2-1)
- MP.4 Model with mathematics. (K-ESS2-1),(K-ESS3-2)
- K.CC Counting and Cardinality (K-ESS3-2)
- K.CC.A Know number names and the count sequence. (K-ESS2-1)
- K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)
- K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. (K-PS3-1),(K-PS3-2)
- K.MD.B.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)

#### Suggested Activities:

- **Week 1: Introduction to the Engineering Method and Working in Groups**
  - Read: *Rosie Revere, Engineer*, by Andrea Beaty
  - Continue recording weather on a daily basis
  - Introduce what an engineer is.
  - Talk about the engineering method
  - Work in collaborative groups to solve the problem: Using only spaghetti noodles and marshmallows create the tallest, freestanding structure that will support the largest marshmallow on top.
  - Do introduction to temperature measurement lab.
    - learn how to read a thermometer by measuring ice water and room temperature water
    - go over that the "mercury" goes up and down based on the temperature going up or down

- **Week 2:**
  - Read: *What’s the Weather?,* by Scholastic
  - Read: *Sun,* by Lauren Taylor
  - Read: *Sunlight,* by Erin Edison
  - Read: *Weather,* by Robyn Supraner
  - Read: *The Reasons for Seasons,* by Gail Gibbons
  - As students record daily weather, start making predictions about tomorrows weather based on the pattern students are observing
  - Plant shade and sun loving plants in different sections of the garden
Remind students about the scientific method and explain the changing variable in the classes experiment is going to be shade.

Show that different things on the surface of the earth heat at different rates
- Place counting bears on different surfaces around the school (sand soil, water and rocks)
- Take temperature readings of soil, sand, water and rocks
- Graph the temperatures noting differences
- Discuss where our bears are going to be the warmest and the coolest

Brainstorm about the effect of the sun on shade and sun loving plants in the garden

**Week 3:**
- Read: Weather, by Gallimard Jeunesse
- Read: The Best Book of Weather, by Simon Adams
- Read: Weather Words, by Gail Gibbons
- As students record daily weather, start making predictions about next weeks' weather. Start looking for patterns in the weather
- Continue with journal entries and observations in the garden.
- Build a shade structure to protect the sections of plants in the garden from the effects of the sun. Explain you are creating the variable for the class science experiment
  - Students should record in observational journals using drawings. This will allow them to note differences between weeks and long term effects of the sun.
- Engineering Project: Protect Bears from the effects of the sun

**Week 4**
- Read: Weather, by Catriona Clarke
- Read: Wind, by Lauren Taylor
- Read: Snow, by Lauren Taylor
- Read: Rain, by Lauren Taylor
- As student record daily weather, continue with predictions and begin discussing what would happen if we don’t get rain, or too many days go by with just sunshine.
- Engineering Project: Design a boat for the bears
  - tie in temperature in the water versus temperature on land
- Continue observations in the garden
  - help students to measure and record observations

**Week 5**
- Read: Wind, by Erin Edison
- Read: Snow, by Erin Edison
- Read: Lightning, by Erin Edison
- Read: Rain, by Erin Edison
- Read: Clouds, by Erin Edison
- Prepare for weather situations in our area: drought
- Engineering Project: Build a structure to help the bears deal with drought
- Look at weather across California. Compare and contrast different possible severe weather issues based on a region of California.
- Continue observations in the garden
help students to measure and record observations

Week 6
○ With adult help, students create a storybook describing a story in which bears are in a situation where a severe weather event has been predicted and the bears describe what they need to do to survive
○ Engineering Project: Build a structure to go along with their created story to protect their bears from the effects of severe weather.
○ Process whether shade loving plants can survive in the sun and sun loving plants can survive in the shade.
  ■ Have students give evidence based on their learning supporting their claims

Review Activities:
• Matching games
• iPad apps
• Exit tickets
• Quizlet games
• Word sorts

4. Resources

Trade Books:
• Rosie Revere, Engineer, by Andrea Beaty
• What’s the Weather?, by Scholastic
• Sun, by Lauren Taylor
• Sunlight, by Erin Edison
• Weather, by Robyn Supraner
• The Reasons for Seasons, by Gail Gibbons
• Weather, by Gallimard Jeunesse
• The Best Book of Weather, by Simon Adams
• Weather Words, by Gail Gibbons
• Weather, by Catriona Clarke
• Wind, by Lauren Taylor
• Snow, by Lauren Taylor
• Rain, by Lauren Taylor
• Wind, by Erin Edison
• Snow, by Erin Edison
• Lightning, by Erin Edison
• Rain, by Erin Edison
• Clouds, by Erin Edison

Websites/Technology:
• Accuweather
• InstaWeather Pro App
**Videos/DVDs**

- How's the Weather
- Weather vs. Climate
- Weather Song
  - [http://youtu.be/-dxbC4-nlEc](http://youtu.be/-dxbC4-nlEc)

**Discovery Education**

- Discovery Education:  Yesterday, Today and Tomorrow
  - tab=model-lesson-tab&page=1&subTab=curriculum-standards)
- Discovery Education:  Weather and Water
  - tab=model-lesson-tab&page=1&subTab=curriculum-standards)
- Discovery Education:  Seasons of the Year
  - tab=model-lesson-tab&page=1&subTab=curriculum-standards)

**Field Trips**

- Painted Pony Farm

**VTS:**

- See Think Wonder
- Zoom In
# Engineering Method

<table>
<thead>
<tr>
<th>1. What is the problem?</th>
<th>Using only spaghetti noodles and marshmallows create the tallest, freestanding structure that will support the largest marshmallow on top.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Brainstorm ideas and solutions</td>
<td>Talk to your teammate about possible ideas</td>
</tr>
<tr>
<td>3. Draw your design</td>
<td></td>
</tr>
</tbody>
</table>

[Image of question marks]
<table>
<thead>
<tr>
<th>4. Build a Prototype!</th>
<th>Build your spaghetti structure!</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raise your hand to get measured!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Evaluate and redesign</th>
<th>I think __________________ worked well!</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I would like to fix ____________________</td>
</tr>
</tbody>
</table>

| 6. Make changes, retest and communicate results | Draw a picture of what your new structure would look like: |
**Bears Need Shade!!!**

**K-PS3-2**: Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area. This activity also addresses the engineering standard for grades K-2 –

Review what students have learned so far (the sun heats the earth surface. Different areas of the surface are affected by the sun differently….the black paper was the hottest surface when we measured the temperature outside.)

**Materials:**
- The black paper plate from Activity 2 (or whichever substance absorbed the most heat in Activity 2), bears
- Materials to build a shade, canopy or tent: paper, straws, clay and tape

**Procedure:**
Read the short story about the monsters who need shade. Challenge for your students: can you design & build a structure that will reduce the warming effect of sunlight on an area? It’s a hot day and the monsters need shade –Can we make a shade structure for the bears??

Go over Engineering Method and let kids build

**Discussion:**
Explain your structure to the class. How does it reduce the warming effect of the sun? (It blocks the rays) How can we see if your shade structure actually works? (Put black paper plate outside with a thermometer and put shade structure over another black paper plate with a thermometer- see which 1 has the lowest temperature).
Engineering Method: Reduce warming effects of Sunlight on Our Bears!

1. What is the problem?
Your bears are too hot! They need a structure to shade them from the sun! Create a structure that will lower the temperature of the sun’s effects on the earth.
You will only have clay, paper, straws and tape to work with.

2. Brainstorm ideas and solutions
Talk to your teammate about possible ideas.

3. Draw your design

Name _____________________________  Date ____________
<table>
<thead>
<tr>
<th>4. Build a Prototype!</th>
<th>Build your shade structure! Test your structure using the flashlight. Were you able to protect your bear?</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Evaluate and redesign</td>
<td>I think ______________ worked well! I would like to fix ______________.</td>
</tr>
<tr>
<td>6. Make changes, retest and communicate results</td>
<td>Draw a picture of what your new structure would look like:</td>
</tr>
</tbody>
</table>
Bears Need A Boat!!!

Standards Addressed:
K-2- ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2- ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2- ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Review what students have learned so far (the sun heats the earth surface. Different areas of the surface are affected by the sun differently….the black paper was the hottest surface when we measured the temperature outside. Last time, students learned that they could build a structure to shade the bears from the effects of the sun)

Materials:
- Materials to build a shade, canopy or tent: paper, straws, clay, aluminum foil, tape and bears.
- Tubs to test the boats in.

Procedure:
Let students know that their bears are in peril again!! Now students really need to be engineers. The bears need students to build boats to transport them from the _____ to ______ using the fewest amount of boats possible. To do this, students will need to design a boat that can hold the most bears possible!

Go over Engineering Method and let kids build

Discussion:
Explain your structure to the class. How many bears can it hold? Does it reduce the warming effect of the sun (Probably not.)

Extension: Can you make a boat to hold the greatest number of bears possible AND shade them from the effects of the sun?
Discussion 2:

(How does it reduce the warming effect of the sun? (It blocks the rays) How can we see if your shade structure actually works? (Put the tub outside in the sun with a thermometer. - see which 1 has the lowest temperature).
Name _____________________________  Date ____________

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<tbody>
<tr>
<td><strong>1. What is the problem?</strong></td>
</tr>
<tr>
<td><img src="image1.png" alt="Question Mark" /></td>
</tr>
<tr>
<td><strong>2. Brainstorm ideas and solutions</strong></td>
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<tr>
<td><img src="image2.png" alt="Thinking Cap" /></td>
</tr>
<tr>
<td><strong>3. Draw your design</strong></td>
</tr>
<tr>
<td><img src="image3.png" alt="Pencil" /></td>
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</tbody>
</table>
4. Build a Prototype!

Build your boat!

Carefully test your boat by adding bears one at a time.

The most bears our boat held: ___

5. Evaluate and redesign

I think __________ worked well!

I would like to fix ______________.

6. Make changes, retest and communicate results

Draw a picture of what your new structure would look like:
Unit Overview

As California moves from the current Science standards to the Next Generation Science standards, teachers are left with the desire to balance the knowledge needed for continued success in testing with the skills required by the NGSS performance tasks. Every teacher truly strives for increased critical thinking, imagination, and the ability to provide projects for our students to explore concepts at a deeper, more meaningful level. This unit is our attempt to merge the current science standards with the rigor and depth of knowledge required by the NGSS and Common Core standards combining the conceptual knowledge needed for current state testing.

Current 4th grade science standards act as background knowledge for our cross curricular unit as we present students with a STEM project “problem” they must solve. Students are “dropped” by heterogeneous groups onto a desert island. They are given limited resources to build a shelter and create electricity. The unit begins as students use mathematical concepts in area and perimeter to design a shelter out of materials found on the island. The reading of Swiss Family Robinson, provides rich core literature opportunities in reading, writing and language development as well as shelter ideas and opportunities to compare scientific concepts with ideas in fictional writing. As students gain knowledge and build their shelters, the concepts behind building a generator with copper wire and magnets is reviewed. Students take that knowledge and attempt to create an electrical current to light a small light bulb which will help tribes to survive their “stranding” on a desert island.

Throughout this unit, students will present their prototypes noting strengths and weaknesses in each design. As they share with the class, students will continue to make changes, perfect, and test their designs. Already familiar with the engineering method, students will use this framework as they continue to improve and alter their designs. A final project will be presented to the class as students show understanding of the scientific concepts.

As students become increasingly successful in showing the concepts behind creating generators, more items may show up on their island to provide opportunities for extensions and challenges. A solar panel or turbine may wash ashore providing students with more opportunities to show their understanding of the physical science concepts. Additional challenges involving parallel and series circuits may present themselves as additional light bulbs and wire may wash ashore. Through constant and consistent teacher evaluation, students will have differentiation and extension activities provided to help create positive experiences and differentiated opportunities to show understanding.
As their shelters evolve, students will mathematically figure out how much wire, wood, and additional building materials are needed to continue to expand their shelters. Reading and writing will continue to be supported as student’s research and report on possible places around the world deserted islands may exist.

As this unit culminates in a parent viewing, students will verbalize their ideas, successes and struggles as well as knowledge of the scientific content. Parents are encouraged to question student thinking and provide feedback as students share their final structures. This is a highly motivating unit that takes the knowledge of the current standards and applies the cross curricular rigor of the NGSS and Common Core, providing students with opportunities in the engineering method, reading, writing and math as well as NGSS Science standards.

Essential Standards Addressed

4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Reference to CCSS Standards: W.4.7, W.4.8, 4.OA.A.3, MP.4

Current 4th Grade Physical Science standards are also addressed

Success and Assessment

This unit begins with a pretest. Based on student knowledge, material will be adapted by the teacher. Formative assessment will drive instruction throughout the unit’s progress. Ongoing Formative Assessment:

- Teacher observation of students engaged in cooperative learning investigations
- Science notebook (questions, predictions, observations, summaries, charts, drawings and notes)
- Exit slips
- Anecdotal notes based on classroom participation and involvement.
- Pearson Science Chapter Assessments

Summative Assessment:

Pearson Science Unit Assessment

- Students will complete a project in which they are challenged to imagine they are stranded on a desert island with no power source. Students will need to apply knowledge of circuits, electricity, generators, area and perimeter to solve the problem of creating a shelter that has electricity. converting motion into electricity.
  - Students will be graded using a rubric assessing the following areas:
Mathematically designing and scaling a structure.

Students will relate their situation through compare and contrast as well as other literary standards to the book Swiss Family Robinson.

Students will use their scientific knowledge of converting motion to electricity in order to bring electricity to their shelters. They will then prove that an electric current is present and flowing.

Positive Effects on Students

As students work in heterogeneous groups, all students are responsible and successful at a differentiated level, showing their understanding through various modalities. All learning styles are addressed in these groupings providing lots of opportunities for showing knowledge. Additionally, this project is beneficial in that it infuses language arts, math, science and technology to inspire student interest in science. As student interest increases, learning and higher level thinking will develop, helping to make our students more competitive in both national and global societies. Although this unit is a humble beginning, it is hoped that the skills learned will transfer far beyond elementary school into high school, perhaps college and possibly life. Who knows where a spark in interest and confidence in the scientific fields could ultimately lead?
Fourth Grade Survivor Challenge

Situation: You and your tribe are stranded on an island without a shelter. Your first challenge is to survive the elements until you are rescued. You must design and build a shelter.

This is an in class project.

1st Challenge: Your Tribe’s Shelter

You will be building a scale model of your shelters from the ground up. A roof is optional but must be easily removed if you choose to make one.

- Size:
  - Your shelter is to be no larger than 18X18 inch pizza box.

- Materials:
  - You may use any materials you find at home or from nature.  No pre-made structures.  Please do not buy anything.

Notes for materials:

________________  ________________  _________________  
________________  ________________  _________________  
________________  ________________  _________________  

Timeline

- Week of May 5: Begin to collect supplies and bring to homeroom class in a bag labelled with your name on it.
- Week of May 12: Design shelters with your tribe in class.
- Week of May 19: Build scale models of your tribe’s shelter in class.
Name: __________________

Fourth Grade Survivor Challenge #2

Situation: Now that you have provided shelter for your tribe, your tribe decides that having electricity is key to your survival. Your tribe will only be rescued when you are able to light up a light bulb for your shelter. Lucky for you, some supplies have washed ashore. Use these supplies to light your light bulb and you will be rescued.

Reminder: This is an in class project.

2nd Challenge: Lighting a Lightbulb For Your Shelter

- You must show the teacher that your light bulb is lit.
- You may only use the supplies that have washed ashore.

Timeline

- Week of May 26: Research ways to light your light bulb using only the supplies you are given and put your idea to the test.
Here is your task: Using all the math skills you have learned this year and with the materials you have:

- Design a “rough floor plan” of a shelter that you will live in until you are rescued. (Make sure you and your tribe will fit in your shelter!) This needs to include specific U.S. Customary Measurements, and the perimeter and area specifications. (Challenge! - include the metric equivalents)
- Design a scale drawing of the “rough floor plan” of your shelter. This needs to include specific U.S. Customary Measurements, and the perimeter and area specifications. (Challenge! - include the metric equivalents)
- You will build your shelter using the scale drawing you create.
- Your scale model will be no larger than a 18”x18” rectangular pizza box.
Possible email to parents:

Our 4th graders have will be completing their Survivor Challenge. Their projects will be on display in the Science Lab (Room 23) on Friday, June 6 from 7:45 a.m. until 11:45 a.m. You are welcome to come view your child's project during this time.

This is a STEM (Science, Technology, Engineering, and Math) project that involved your child working with an assigned group of students. They were given this situation: You and your tribe are stranded on an island without a shelter. Your first challenge is to survive the elements until you are rescued. You must design and build a shelter. The student “tribes” then designed their shelters and created a scale drawing of their shelters. The next step was to build their shelters using materials found at home.

After completing this first challenge, students were then given this situation: Now that you have provided shelter for your tribe, your tribe decides that having electricity is key to your survival. Your tribe will only be rescued when you are able to light up a light bulb for your shelter. Lucky for you, some supplies have washed ashore. Use these supplies to light your light bulb and you will be rescued. The student “tribes” then experimented with solar power, battery circuits and generators. In the end, the students created electricity by showing a circuit with a battery.
**4th Grade Survivor!!**

**Grade:** 4th  
**Topic:** and Engineering Design  
**Time:** 5-6 Weeks

*4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*

*3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.*

*3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.*

*3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.*

STEM project: Figure out a way to convert motion to electricity in order to bring electricity to your shelters. Prove that an electric current is present and flowing.

<table>
<thead>
<tr>
<th>1. Desired Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enduring Elements (Big Ideas)</strong></td>
</tr>
</tbody>
</table>
| Energy can be created by sources other than batteries and electrical outlets  
  Different forms of energy can power a light bulb  
  Engineering designs and solutions can be created using limited supplies  
  Comparing multiple solutions can help refine and improve all designs  
  Fair tests of prototypes help to create better designs |
| **Essential Questions** |
| What are different ways to generate electricity to power a light bulb?  
Is it possible to power a bulb without a stored source of energy?  
Can you prove an electric current is present and flowing even though no source of stored energy is present?  
Can you explain how a light may be powered without a source of stored energy? |

<table>
<thead>
<tr>
<th>Understanding the Standard (Disciplinary Core Ideas)</th>
<th>Essential Knowledge, Skills and Processes</th>
</tr>
</thead>
</table>
| Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy. | Students who demonstrate understanding can:  
  show that they know how different types of circuits work and the benefits using either a simple or parallel circuit in different situations. |
The expression "produce energy" typically refers to the conversion of stored energy into a desired form for practical use.

Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.

Communicate the possibility that an obvious power source may not be necessary to power a light bulb.

Model alternate sources of energy explaining that an electric current is present and flowing.

Show evidence for reasoning behind their engineering designs.

Apply knowledge from multiple solutions to engineering designs refining and perfecting their ideas.

Design a solution to the problem of being stranded on a desert island with only a magnet, a ball of copper wire and a light bulb.

Science Vocabulary

Simple circuit, parallel circuit, generator, magnet,.................

2. Assessment Evidence

<table>
<thead>
<tr>
<th>Prior Knowledge</th>
<th>Throughout the Unit</th>
</tr>
</thead>
</table>
| students need to have an understanding of the relationship between magnets and electricity | **Formative Assessment:**
| students need to know that generators are another way to produce electricity | • Teacher observation of students engaged in cooperative learning investigations
| students know that circuits are either parallel or series and understand the differences between the two | • Science notebook (questions, predictions, observations, summaries, charts, drawings and notes)
| students need to understand how to find area of a given space | • Exit slips
| | • Anecdotal notes based on classroom participation and involvement.
| | • Pearson Science Chapter Assessments

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<tr>
<th>Summative Assessment:</th>
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| • Pearson Science Unit Assessment
| • Students will complete a project in which they are challenged to imagine they are stranded on a desert island with no power source. Students will need to apply knowledge of circuits, electricity, generators, area and |
perimeter to solve the problem of creating a shelter that has electricity. converting motion into electricity.

- This project will involve mathematically designing and scaling a structure.
- Students will relate their situation through compare and contrast as well as other literary standards to the book *Swiss Family Robinson*.
- Students will use their scientific knowledge of converting motion to electricity in order to bring electricity to their shelters. They will then prove that an electric current is present and flowing.

### 3. Learning Plan

**Reference to CCSS Standards**

- W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic
- W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources
- 4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- MP.4 Model with mathematics.

**Suggested Activities:**

**Project:**

This is a STEM (Science, Technology, Engineering, and Math) project that involves students working in cooperative groups. They are given this situation: You and your tribe are stranded on an island without a shelter. Your first challenge is to survive the elements until you are rescued. You must design and build a shelter. The student “tribes” then design their shelters and create a scale drawing of their shelters. The next step is to build their shelters at school using natural materials found at school or home.

After completing this first challenge, students are then given this situation: Now that you have provided shelter for your tribe, your tribe decides that having electricity is
Key to your survival. Your tribe will only be rescued when you are able to light up a light bulb for your shelter. Lucky for you, some supplies have washed ashore. Use these supplies to light your light bulb and you will be rescued. The student “tribes” then experiment with solar power, battery circuits and generators. If necessary, students are given batteries to prove the integrity of their circuits.

Week 1:
- Students review how generators work.
- *Swiss Family Robinson* is being read and discussed in class.
- Vocabulary from *Swiss Family Robinson* is being included in word work and writing lessons.
- Students review area and perimeter in math.

Week 2:
- Teams are formed as “tribes” for the challenge: Students must design and build a shelter starting with a drawing and then creating a scale model.
- Students are given the first challenge.
- A “rough floor plan” is being designed in math class using perimeter and area. (A challenge is to find the metric equivalents.)
- An explanation of “scale drawing” is introduced, explained and practiced.
- Science concepts are further brainstormed and reviewed.
- First 80 pages of *Swiss Family Robinson* are being used as CORE literature (up until the family builds its structure).
- Evidential reading from science is being applied to *Swiss Family Robinson* as circumstances from fiction are being compared to informational text.

Week 3:
- Students begin building shelters.
- Students begin working on generators.
- Students continue comparing their shelters to their scale drawings.
- Students check each others’ work mathematically.
- Students brainstorm ideas for creating electricity without a power source and decide what materials they may need.
- Students finish *Swiss Family Robinson* activities and discussions.

Week 4
- Students continue working on shelters and begin creating circuits to light a light bulb in their shelters. (A challenge is to create a parallel circuit.)

Week 5
- Students present completed project to their peers and discuss what went right
and what they would improve upon for next time.

- As time allows, students may modify projects using information related from the multiple solutions within the class.

Week 6:

- Students present their final projects to parents.
- As a language arts extension, students may research an island to determine what types of energy sources are available (e.g. sunlight, waves, wind, or fossil fuels) and write an opinion piece explaining how the inhabitants should make their electrical energy.

Review Activities:

- vocabulary skills
- iPad apps
- creation of digital storybook

Outdoor/Garden Connections:

- Students will be using materials gathered from the outdoor resources at school and at home.
- Possible future connection: What crops may be a viable option to grow if the team is not rescued?

Global Citizenship Connections:

- Being stranded on a desert island lends itself to thinking about conserving available resources. Students will identify methods to conserve resources and understand why this is important everywhere in the world. Students may survey at school or at home and come up with places to conserve these resources. Students will demonstrate understanding using the technological option provided.

4. Resources

Trade Books:

- Swiss Family Robinson, by Johann David Wyss
- Pearson Science
- Everyday Math

Websites/Technology:

- Mound Teachers Shared Google Resources:  https://drive.google.com/a/venturaedu.org/folderview?id=0BzPb3IxMgXcAOHhXaEFURTdhMkk&usp=sharing

APPS:

- iMovie
- Keynote
- Educreations
- Socratic
- SlideShark
- Nearpod
- PuppetEDU
- Google Earth

**Videos/DVDs**
- “Swiss Family Robinson”

**Discovery Education:**
- Magnets and Electricity: [http://app.discoveryeducation.com/techbook2:concept/view/guidConceptId/FFDDEC19-3AC0-40C9-8E23-2F3B77A8A7BF/guidUnitId/FC39AA34-8B3C-40D7-B529-7C40C4CD3C60#/tab=engage-tab&page=NaN&subTab=](http://app.discoveryeducation.com/techbook2:concept/view/guidConceptId/FFDDEC19-3AC0-40C9-8E23-2F3B77A8A7BF/guidUnitId/FC39AA34-8B3C-40D7-B529-7C40C4CD3C60#/tab=engage-tab&page=NaN&subTab=)
- Electric Circuits: [http://app.discoveryeducation.com/techbook2:unit/view/unitGuid/FC39AA34-8B3C-40D7-B529-7C40C4CD3C60#%23%2F5BDDC100-5A69-4F0D-9815-A06A4D54ADFD](http://app.discoveryeducation.com/techbook2:unit/view/unitGuid/FC39AA34-8B3C-40D7-B529-7C40C4CD3C60#%23%2F5BDDC100-5A69-4F0D-9815-A06A4D54ADFD)

**Field Trips**
- Virtual Field Trip to the island they researched using Google Earth.

**VTS:**
- Same, Same, Different
- See, Think, Wonder
- I used to think..., but now I think...

4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.* [Clarification Statement: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, or time to design the device.] [Assessment Boundary: Devices should be limited to those that convert motion energy to electric energy or use stored energy to cause motion or produce light or sound.]

W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic
W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

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MP.4 Model with mathematics.

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

MP.4 Model with mathematics.

3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

MP.4 Model with mathematics.
Introduction

“Respect your elders,” are age-old words of wisdom. We not only wanted our students to respect our elders, we wanted them to learn from them and capture, via a scrapbook, their life stories. Embracing Common Core State Standards, our school has placed our emphasis on Project-Based Learning. We created a project that would incorporate three academic areas: English, History, and Science. We called it, “Elder Buddy and the Aging Brain.”

We found it to be an innovative and creative way for our students to connect to the “real world” by using their personal and social skills while gaining tremendous benefits for their future. In order to integrate these curricular areas and get student “buy-in,” we needed to create relationships outside of our school. We partnered with a local senior retirement center to do this. This project pairs each of our students with one Elder Buddy. Weekly meetings over the course of one semester build relationships and bonds that are priceless. This project positively impacted students’ attendance. Students felt such a connection to this Elder Buddy Project that our highly at-risk students (ELL’s, Special Ed, Teen Parents, low socio-economic, extremely credit deficient, etc.) rarely missed school. For many of our students, this connection with their Elder Buddy is the only positive relationship they have in their life.

Integration of Academic Areas

Through the oral history of their Elder Buddy, students systematically collected first-hand testimony of their Elder Buddy’s life experiences. Students quickly grew proficient at interviewing and note-taking as they documented what their Elder Buddy shared with them. Topics included: Growing Up Years, Teen Years, Key Life Events and Places I’ve Lived Throughout My Life, The World Around Me…Major Historical Events: Inventions, Medical Discoveries, Changes in Transportation, Presidents You’ve Lived Under/World Leaders, Entertainment and Fads, Wisdom Through the Years, Final Letter to My Elder Buddy: What You’ve Taught Me Through This Project. Each section has a series of 8-10 questions in it and sometimes will take two visits to get through all the questions.

Before long, our students soon realized that their Elder Buddy had actually lived the history that they had previously been reading about in a textbook. Our students became proficient writers as they learned to summarize and synthesize all the information they gathered from their Elder Buddies. History was definitely
coming alive for our students. Their writing skills were blossoming. Science fit in nicely as our students learned first-hand the aging of the brain process as their Elder Buddies struggled to recall a particular memory or event from the past. Some Elder Buddies also had spouses in the Memory Care Facility and shared their experiences and frustration at the onset of memory loss. This led to class discussion about the brain and how it ages. We then delved deeper into the anatomy and physiology of the brain. We researched signs and stages of dementia and Alzheimer’s and what parts of the brain were affected. Our students now had a purpose for looking deeper into this scientific topic which greatly impacted the lives of their Elder Buddies.

Integrating Technology

Not only do we have English, History, Science, and even Art integrated in this project, we also have technology.

Every week when we visit our Elder Buddies, we take pictures and upload them into Google Docs. These photos are “shared” with all of our students in their Google Drive. Students upload these photos and choose the ones they want to put in their Elder Buddy’s scrapbook. They then learn how to arrange them creatively on a page by putting in varying border sizes and colors around each photo, inputting callouts and speech bubbles. Every week after their visit, the students would summarize the information as well as the research they had done, and manipulate them onto a page in a scrapbook. It is a fun and meaningful way for our students to become 21st century learners by integrating technology throughout the project. Students become proficient using Microsoft Publisher while creating pamphlets on Neurological Disorders of professional quality.

Project Presentation and Authentic Audience

We decided the best way for our students to show all that they had learned was to create a scrapbook of their Elder Buddy’s life journey. Using information gathered through research and weekly interviews, students were given creative license with their scrapbooks. They painstakingly and lovingly worked on each scrapbook for the entire semester being cognizant of what was important and near and dear to their Elder Buddy. Students used technology, store-bought stickers, as well as hand-crafted art to embellish each page. It was frustrating and challenging at times, but because it was something tied to a very special person who became someone very important to them, they persevered. The end result? A uniquely crafted, one-of-a-kind scrapbook for every Elder Buddy to keep; filled with all the historical information they had shared with their Student Buddy. The expressions on their Elder Buddy’s faces were priceless. Our favorite quote from one of our Elder Buddies is, “I’m so glad I was pressured by my friend to do this project because it’s the greatest thing that’s happened to me since I moved to the retirement home.”

One of our favorite student comments, “I think that this project made a big impact on my Elder Buddy and me. I learned to respect the elderly. I had never spoken to elderly people like I was asked to in this project. I really think that talking to elderly people can teach you a lot of things because they are wise, and I think they can change the way you think about things, and change the way you look at life.”

Assessments

- Intermediate Deliverables for all areas of the project
- Interactive Notebooks include: Interviewing, Documenting, Note-taking, Historical Research,
Summarizing, Reflecting

- Weekly research topic check points
- Scrapbook
- Neurological Disorder pamphlet

Standards

Common Core State Standards covered are English Language Arts, Literacy Standards for Social Science. Next Generation Science Standards.
Students were allowed creative license to use all their notes they had from interviewing their Elder Buddy over the course of a semester, along with all the research they had done, to put together a beautiful, one-of-a-kind scrapbook of their Elder Buddy's life journey. Students use Google docs. to design the layout of pages for their scrapbooks. They also used templates to create letters and background for the scrapbook pages, as well as store-bought stickers and self-made stickers to decorate the pages in a way they knew their Elder Buddy would love.
### Interviewing and Note Taking

**Historical Events:** What major historical events happened during their lifetime that had a significant impact on their life? (Ex. Great Depression, WWII, etc.) How did it impact them? How did it change their life?

1. **World War II**
   - Significance: Changing the course of life.
   - Impact: Immigrants, those who served, those who had to leave.

2. **Bob War 5 years old when the war started:**
   - Impact: Memories of the war.

3. **No other events buddy was able to remember:**

**Inventions:** What inventions were created during their lifetime? (Ex. Light bulb, washing machine, etc.) How did they impact them? How did it make life easier for them?

1. **Inventions:**
   - Significance: Changes in daily life.
   - Impact: Technology, innovation.

**Celebrating Veteran's Day with Out Elder Buddies**

- **Key Life Events & Places I've Lived Throughout My Life:**
  - **Place:**
    - **City:**
      - **State:**
        - **Country:**
  - **Time of the Spouse**
    - **Age:**
    - **Years Married:**
    - **Children:**
      - **Name:**
      - **Gender:**
      - **Age:**

**Details about their wedding:**
- **Venue:**
- **decorations:**
- **Food:**

**Tell them things you love about your spouse:**
- **Physical:**
- **Personality:**

**Why are you proud of your spouse?**
- **Achievements:**
- **Character:**

**What is your favorite memory of your spouse?**
- **Event:**
- **Location:**

**Current Address:**
- **Street:**
- **City:**
- **State:**
- **Country:**

**Phone:**
- **Number:**
ELDER BUDDY INTERVIEW QUESTIONS #2

THE WORLD AROUND ME...MAJOR HISTORICAL EVENTS

(RESEARCH!! List the impact these had on your buddy) Dates, places, etc., for each

**Historical events:** What major historical events happened during their lifetime that had a significant impact on their life? Ex. (Great Depression, WWII, etc.) How did it impact them? How did it change their life?

1. __________________________________________________________________________

________________________________________________________________________

2. __________________________________________________________________________

________________________________________________________________________

3. __________________________________________________________________________

________________________________________________________________________

**Inventions:** What inventions were created during their lifetime? Ex. (TV, light bulb, washing machine, etc.) How did they impact their lives? How did it make life easier for them?

1. __________________________________________________________________________

________________________________________________________________________

2. __________________________________________________________________________

________________________________________________________________________

3. __________________________________________________________________________

________________________________________________________________________
Medical discoveries: What discoveries in medicine made an impact on your life? In what ways?
1.________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________

2.________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________

Changes in transportation: What changes have you seen in your lifetime as far as transportation goes? Which ones made the biggest impact on your life? In what ways?
1.________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________

2.________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________

3.________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________

Presidents you’ve lived under/world leaders: Which Presidents or world leaders have you lived under who made the biggest impact on your life? Who were they and how did they impact your life?
1.________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________

2.________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________

3.________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________