Objectives of the Three Week Program

• Hands-on approach to state standards
• Emphasis on multimedia integration
• Small student to teacher ratio
• To demonstrate interdisciplinary skills
• Opportunities for off-site learning
• No cost to households in district
• Meals provided
Our District/School

District
- 4378 students
- 283 teachers
- Student to teacher ratio 15.5:1
- 11.4% low income
- 13.5% special education

High School
- 1258 students
- 78 teachers
- Student to teacher ratio 16.1:1
- 8.9% low income
- 8.2% special education
MCAS 8th Grade Results

**English**

9% Advanced

73% Proficient

16% Needs Improvement

2% Failing/Warning
MCAS 8th Grade Results

Math

16% Advanced

37% Proficient

32% Needs Improvement

14% Failing/Warning
MCAS 8th Grade Results

Science

2% Advanced
44% Proficient
47% Needs Improvement
8% Failing/Warning
Identified Weaknesses (English)

- Understanding Text
  - Identify and analyze patterns of imagery or symbolism.
  - Identify and interpret themes and give supporting evidence from a text.
- Nonfiction
  - Analyze the logic and use of evidence in an author’s argument.
  - Analyze and explain the structure and elements of nonfiction works.
- Poetry
  - Identify, respond to, and analyze the effects of sound, form, figurative language, graphics and dramatic structure of poems.
Identified Weaknesses (Math)

- **Linear Equations**
  - Understanding the relationship between various representations of a line. Determine a line’s slope and x- and y-intercepts from its graph or from a linear equation. Find a linear equation describing a line from a graph. Understand the difference between a positive, negative, zero, and undefined slope.
  - Find linear equations that represent lines either perpendicular or parallel to a given line and through a point.

- **Probability and Statistics**
  - Select, create, and interpret an appropriate graphical representation for a set of data and use appropriate statistics to communicate information about the data. Use these notions to compare different sets of data.
  - Approximate a line of best fit given a set of data. Use technology when appropriate.

- **Ratio and Proportion**
  - Use ratios and proportions in the solution of problems involving unit rates, scale factors, and rate of change.

- **Volume, Area and Perimeter**
  - Calculate perimeter, circumference, and area of common geometric figures such as parallelograms, trapezoids, circles, and triangles.
  - Relate changes in the measurement of one attribute of an object to changes in other attributes, e.g., how changing the radius or height of a cylinder affects its surface area or volume.
Identified Weaknesses (Science)

- **Biochemistry**
  - 1.3 Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, that have an effect on enzymes.

- **Cells**
  - 2.1 Relate cell parts/organelles (plasma membrane, nuclear envelope, nucleus, nucleolus, cytoplasm, mitochondrion, endoplasmic reticulum, Golgi apparatus, lysosome, ribosome, vacuole, cell wall, chloroplast, cytoskeleton, centriole, cilium, flagellum, pseudopod) to their functions. Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, facilitated diffusion, active transport).

- **Genetics**
  - 3.6 Use a Punnett Square to determine the probabilities for genotype and phenotype combinations in monohybrid crosses.

- **Ecology**
  - 6.4 Explain how water, carbon, and nitrogen cycle between abiotic resources and organic matter in an ecosystem, and how oxygen cycles through photosynthesis and respiration.
Weekly Themes

English

- Scientific Language vs. Figurative Language
- Shakespeare/Epic Literature
- Poetry/Poetic Elements
Weekly Themes

Math

• Linear Equations
• Probability and Statistics
• Ratio and Proportion
• Volume, Area and Perimeter
Weekly Themes

Science

• Cells
• Genetics
• Evolution, Biodiversity, and Ecology
English Daily Lessons

• Used themes to promote certain weekly targets
  o Scientific language vs. figurative language
  o Use of persuasion in primary documents
  o Poetic language and techniques
  o Dramatic literature and techniques
• Utilized multimedia opportunities
  o Research opportunities
  o Interactive websites
  o Primary source searches
• Hands on/off site learning
  o Nature walks
  o Castle building
• MCAS Practice Testing
  • Coupled with graphic organizers
Math Daily Lessons

• Used themes to promote certain weekly targets
  o Linear Equations
  o Probability and Statistics
  o Ratio and Proportion
  o Volume, Area and Perimeter

• Utilized multimedia opportunities
  o Research opportunities

• Hands on/ Off site learning
  o Educational Field Trips
  o Cooperative Group Activities
  o Physical Activities

• MCAS Practice Testing
  o Pre Evaluation Exams
  o Post Evaluation Exams
Science Daily Lessons

• Used themes to promote certain weekly targets
  o Importance of enzymes in chemical reactions
  o Structure and function of cell organelles
  o Use of Punnett squares to predict genotypes/phenotypes
  o Constructing biogeochemical cycle diagrams

• Utilized multimedia opportunities
  o Research opportunities
  o Interactive websites
  o Primary source searches

• Hands on/ Off site learning
  o Potato Osmosis Lab
  o Licorice DNA strand
  o Food Web Construction

• MCAS Practice Testing
  • Coupled with graphic organizers
Integrating English, Math and Science into One Lesson

- Certified English, Math, and Science teachers working together throughout the week on numerous lessons.
- Lessons had aspects of English standards along with hitting upon Math and Science standards incorporated in one activity.
  - Castle activity
  - Museum of Science Activities
  - Cell Personification Analogy
  - Punnett Squares and Percentages
## Pre / Post Assessments

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<thead>
<tr>
<th><strong>Pros</strong></th>
<th><strong>Cons</strong></th>
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<tr>
<td>Gave an inclination to teacher of individual weaknesses</td>
<td>Time availability and student attitude created inaccurate results</td>
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<tr>
<td>Post tests gave students an increase in self confidence and test taking skills</td>
<td>Did not measure group’s progress</td>
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<tr>
<td>Allowed students to gauge individual progress</td>
<td>Individual progress was not tracked on a grand scale</td>
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Future Recommendations/ Improvements

- Develop more lessons which foster interdisciplinary learning
- Continue to promote multimedia lessons
- Develop SmartBoard lessons
- Continue to work on a cumulative project for each student summarizing achievements
- Create an equivalent and unbiased pre and post assessment
- Create a performance evaluation to send home to guardians in hopes to create an open dialogue for future student tracking