

Welcome!



Take a walk around the room, investigating the posted Monuments

Look to IDENTIFY the following & add your thoughts using the Post It Notes:

VOICES included in the monument

SYMBOLISM represented in the design

MATH CONCEPTS that you see

Be ready to share!

A MONUMENTAL TASK: Connecting Washington, DC Across the Curriculum (NCTM Session 318)

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Science Teacher

Hawken School



Our Purpose

Forward-focused preparation for the real world through the development of character and intellect.

Our Promise

Hawken School prepares students to navigate a complex and dynamic world with self confidence and determination; embrace challenges with disciplined analysis and creativity; and engage others with empathy and integrity.

Commitment to Innovation

The Future For Education: Why Hawken Has To Lead
by D. Scott Looney
www.hawken.edu

Hawken Program Specifics



- A diverse student body of 1045 boys and girls in grades PS – 12
- Average class size – 15
- Student/Teacher Ratio: 9:1
- Student/Computer Ratio: 1:1 in grades 6-12
- Flexible Block Schedule
- Focus on Innovation
- Emphasis on Interdisciplinary Learning
- Real World Problem Solving
- Administrative Support of new ideas and curricular projects

Project Evolution



This Monument Project has evolved over the last 15 years of collaborative work

- Started in math class as a Scale Drawing & Proportion Activity
- Began to evolve as 7th Grade Team of Teachers looked for ways to connect Washington, DC trip to each of our classes
- Each year brings new & revised activities, based on teacher ideas, changes with technology & student needs

Project Overview



- Students have been “contracted” by Washington, DC officials to participate in the proposal and design of a new monument
- Students draw from their research of historical figures, study of historical events, and knowledge of Washington, DC
- Monuments should memorialize a person or event which have had a significant impact on our country
- Students work with a design team (3-4 students) and a project manager (teacher) for the week

Student Creations



- Request for Proposal (RFP) – details history, rationale, funding, description of monuments
- Sketch-Up Drawings & Blueprints
- Green Construction of Model – gaining highest LEED Certification possible
- Narrated Google Earth Tour
- Presentation to Panel of “Washington Officials”
- Gallery Walk for Parents

Brainstorm



GOALS:

1. Brainstorm a Person or Event that had a Significant Impact on United States History
2. Sketch your ideas of what your Monument will look like, including dimensions (if time)
3. Post around the Room

Math & Science Components



- Electric Bill
- How to Read an Electric Meter
- Calculate Cost of Electricity
- Energy Audit & Lights
- LEED Rating
 - Current LEED Rated Buildings
 - How to Earn Points
 - Spreadsheet & Website
 - Energy Calculations

Math Concepts



- Scale Drawing & Proportional Reasoning
- Calculations – Kilowatt Hours, Energy Costs
- Percent – Percent of Energy Consumption
- Unit Conversions
- Critical Thinking, Problem Solving, Communicating Mathematically

Common Core Standards



CCSS.MATH.CONTENT.7.RP.A.1- Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.

CCSS.MATH.CONTENT.7.RP.A.3 - Use proportional relationships to solve multistep ratio and percent problems.

CCSS.MATH.CONTENT.6.RP.A.3.C - Find a percent of a quantity as a rate per 100

CCSS.MATH.CONTENT.6.RP.A.3.D - Use ratio reasoning to convert measurement units

Science Concepts



- Task-Centered Design Process, Prototype Stages, Modeling
- Building Structures, Landscaping Features, Context-Based Design
- LEED principles, energy- and water-saving features
- Electrical measurements, usage, calculations
- National Parks & Monument Systems

NGSS (Science) Standards



Science & Engineering Practices

- Asking Questions & Defining Problems
- Developing & Using Models
- Constructing Explanations & Designing Solutions
- Using Mathematics and Computational Thinking
- Obtaining, Evaluating, and Communicating Information

Core Standards

- PS3.A, B
- ESS3.A, B, C
- ETS1.A, B, C
- ETS2.A, B

Crosscutting Concepts

- Scale, Proportion, and Quantity
- Systems and System Models
- Energy and Matter: Flows, Cycles, and Conservation
- Structure and Function

Connections to Humanities



- Request for Proposal
 - Vision & Development Strategy
 - Rationale
 - Description
 - Voices
 - Funding
 - Google Earth Tour Text
 - Meet the Designers
- Works Cited

Examples & Questions



- Other Integrated Projects:
 - Biodiversity Field Study
 - Unit Conversions
 - Simple Machine Design Challenge
 - Aerodynamics & Free Fall Unit (Expanded Egg Drop)
 - Car Crash Investigation
 - Common Language, Process & Use of
TI-Nspire Software
- Take a few moments to look at examples of student work

Contact Information



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Curriculum Materials Link:
<https://tinyurl.com/HawkenMonumentProject>

